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1968 EDITION





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GOVERNMENT OF THE PROVINCE OF ALBERTA



**A L B E R T A**

**INDUSTRY and RESOURCES**

**1968**

PREPARED BY

**THE ALBERTA BUREAU OF STATISTICS**

Published by authority of

**HONOURABLE A. R. PATRICK**

Minister of Industry and Development

**EDMONTON, ALBERTA**

Printed by L. S. WALL  
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1968







EDMONTON, Alberta,  
January, 1968.

Our province is little more than three score years as a distinct political entity. In less than the span of a lifetime our raw prairies have been tamed to rich farm and ranch land, our forests have been measured and are yielding of their bounty, our mines have become a prime source of heat and power for a continent, and our artisans and technologists are transforming the raw materials of our earth into the range of products required by twentieth century man.

We have just begun.

Within our province are the resources, varied and almost limitless, to provide opportunity for even greater development during the ensuing generation. You are invited to share in the opportunity.

A handwritten signature in cursive script, reading "A. R. Patrick". The signature is fluid and elegant, with a large, sweeping "P" and "A".

Hon. A. R. Patrick, Minister,  
Department of Industry and Development.

# FOREWORD

Periodically it is well worth-while assessing the direction and rate of change of an economy. It is well worth-while assembling available information about the resources, human and material. It is well worth-while reviewing anew both local advantages and local disadvantages, and determining whether external conditions have changed or evolved to a point where new policies or new initiatives are justified.

In this publication we have endeavoured to collect the most up-to-date and relevant data concerning the industrial development of Alberta. Particular emphasis has been given to recent years, since in times of rapid change, long term historical trends have little bearing on economic opportunities. For the same reason, no long range forecasts are made; for an area as young as western Canada, the past is small guide to the future. The changes wrought in the past two decades are proof.

We trust that executives of firms, and economists, will be able to use the data in formulating plans for further economic development. The various series of data are kept current in this Bureau; the reader is invited to write for later, or more detailed, or related information.

Whenever possible we have used data published by the Dominion Bureau of Statistics and our debt to that Bureau is gratefully acknowledged. We have also freely used data prepared by various departments of the Government of Alberta; officials of those departments will welcome further enquiries. The names of those who drafted the various articles are shown in the table of contents. Of those not on the staff of the Alberta Bureau of Statistics and who assisted in the preparation, we wish to thank particularly: W. H. Bogdan, Cartographer, Surveys Branch, Department of Highways; R. E. English, Head, Statistics Branch, Department of Agriculture; J. Gregory, Head, Industrial Engineering Services, Research Council of Alberta; Dr. L. B. Halferdahl, Geology Division, Research Council of Alberta; C. Jackson, Liaison Officer, Department of Lands and Forests; J. G. MacGregor, Chairman, Alberta Power Commission; Dr. G. B. Mellon, Head, Geology Division, Research Council of Alberta; R. G. Steele, Director of Forestry, Department of Lands and Forests; J. W. Telford, Supervisor, Alberta Freight Bureau; Industrial Commissioners, Cities of Alberta.

D. I. Istvanffy, Director,  
Alberta Bureau of Statistics,  
Edmonton, Alberta.

January, 1968



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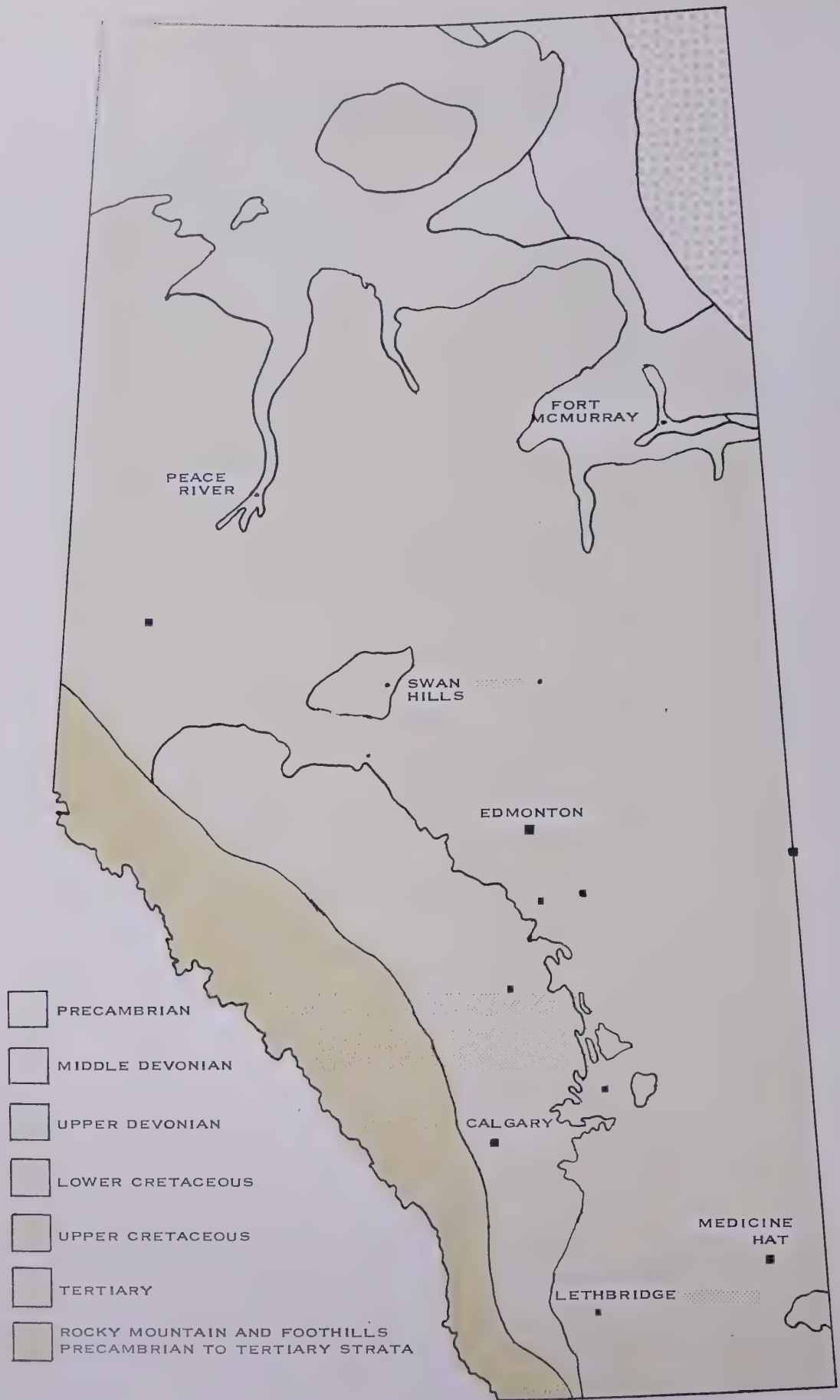
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SURFACE OUTCROP SHOWING GEOLOGICAL AGE

# GEOGRAPHY

Alberta, on the northwestern rim of the central plains of North America, takes in an area of 255,285 square miles, 248,800 being land and the balance fresh water. From the 49th parallel of latitude, the province extends 756 miles north to the 60th parallel. The province lies between 110° and 114° west longitude on the south, about 182 miles; and between the 110th and 120th meridians on the north. Maximum width is 404 miles, close to the 54th parallel of latitude.

The province rises from northeast to southwest. Altitude varies from 700 feet at Lake Athabasca to 4,000 feet along the foothills, and rises sharply to heights of over 10,000 feet above sea level in the mountains.

Broadly, the province comprises three geographic-economic regions based on diverse geographic features and soils. North from the international boundary for a distance of roughly 200 miles, the land is a relatively dry, treeless, gently rolling prairie. Drainage is by the St. Mary's, Bow, and Red Deer rivers. Semi-arid conditions prevail in the south and east of this region. It is a dry farming area where grains have been substituted for natural grasses. Brown and dark brown soils predominate. These soils are second in productivity to the black soils, although more productive than the grey-wooded soils.

The southeastern portion of Alberta and the southwestern portion of Saskatchewan together have been called the Palliser Triangle. This area, with its northern apex near Hanna, Alberta, and its Canada base along the American border, is characterized by short grass and low rainfall. Though capable of raising excellent crops in good years, rainfall is so uncertain that the area is reverting to its natural aptitude: ranching.

A large part of southern Alberta is well suited for irrigation. This semi-arid part of the province is traversed by the six largest tributaries of the South Saskatchewan River; and the topography of the region makes possible the construction, at relatively low cost, of storage reservoirs. The streams are fed by mountain snows and glaciers that provide water in quantity when required throughout the summer months.

North from a Red Deer-Stettler line, the prairies shade into the mixed forests of central Alberta. This pleasant parkland region, with its succession of wide ridges and broad valleys, interspersed with lakes and streams, is drained by the North Saskatchewan River system. Large areas are well adapted to grain growing and mixed farming. Black soils predominate. Both this region and southern Alberta are a part of the Hudson's Bay drainage basin.

The northern half of the province is part of the Arctic drainage basin. It is a region of great rivers, lakes and forests broken by tracts of open prairie like the Grande Prairie district and the wide sweeping terrain of the Peace River Valley. The Mackenzie River system, which in Alberta includes the Peace, the Athabasca, and the Hay rivers, dominates the region. Mixed farming, often of a frontier type, prevails in the south and west of the area, but lumbering is also of major significance. Grey-wooded soils predominate.

The northeastern corner of the province is Precambrian rock of the Canadian Shield, and comprises some three per cent of the total land area.

Alberta has the most varied landscape of any Canadian province. The most prominent topographic feature is the range of Rocky Mountains. Within this mountain region are three of Canada's most celebrated national parks — Jasper, Banff, and Waterton Lakes. The Columbia Ice Field lies astride the British Columbia-Alberta boundary at the division between Banff and Jasper National Parks. Melting waters of the ice field flow north to the Arctic Ocean, west into the Pacific Ocean, and east to Hudson's Bay.

There are five practicable passes through the Alberta section of the Rockies; the lowest of these, the Yellowhead, is 3,700 feet and the highest, the Vermilion, is 5,400 feet above sea level. The others are the Crowsnest at 4,500 feet; the Howse at 5,000 feet and the Kicking Horse at 5,300 feet.

The foothills, lying between the mountains and the plains area, cover about five per cent of the province. Although distinct from the plains, the line of demarcation between the two is not sharply drawn. The country slowly becomes more rolling, the round-topped hills rise higher and higher and become increasingly steeper. The foothills are then transformed into the jagged, precipitous Rockies.

The plains area is broken by some ranges of prominent hills which, in a few cases, rise to altitudes of 4,000 feet. Outstanding among these are the Swan Hills in central Alberta and the Cypress Hills in the southeast corner. Other examples are Marten Mountain, Caribou Mountains, Clear Hills, Buffalo Head Hills and Birch Mountains. These features generally rise 1,000 to 2,000 feet above the level of the surrounding terrain.

Deeply incised river valleys are marked features. For instance, the Peace River, has worn a spectacular valley; wide and deep. The Red Deer River has cut out a mile wide valley to a depth of nearly 400 feet below the surrounding prairie. In this valley are the "badlands". In addition to their weird topography, the badlands are a veritable storehouse of fossils of Devonian age.

Several commercially significant lakes, as well as countless smaller lakes, dot the landscape. Important lakes include Lake Athabasca, important as a transportation route as well as for commercial fishing, and Lesser Slave Lake and Cold Lake with their important commercial fisheries. Other lakes, particularly those in the heavily populated areas, are very popular recreation areas.

While the pattern of settlement in other provinces has been in an east-west pattern along their southern boundaries, Alberta's settlement has been on a north-south axis. The northern section, unlike most other provinces, is largely free of the rocky Precambrian Shield. Virtually all of the province is capable of agricultural development of one form or another and land will likely be taken up as required. Those areas not presently capable of agricultural development attract settlement because of other factors, including their forest cover, or underground resources.

The snow-capped mountains and the rolling foothills, the hospitable parklands and the expansive prairies, the rocky Canadian Shield and the abundant forests combine into a dynamic and beautiful province.

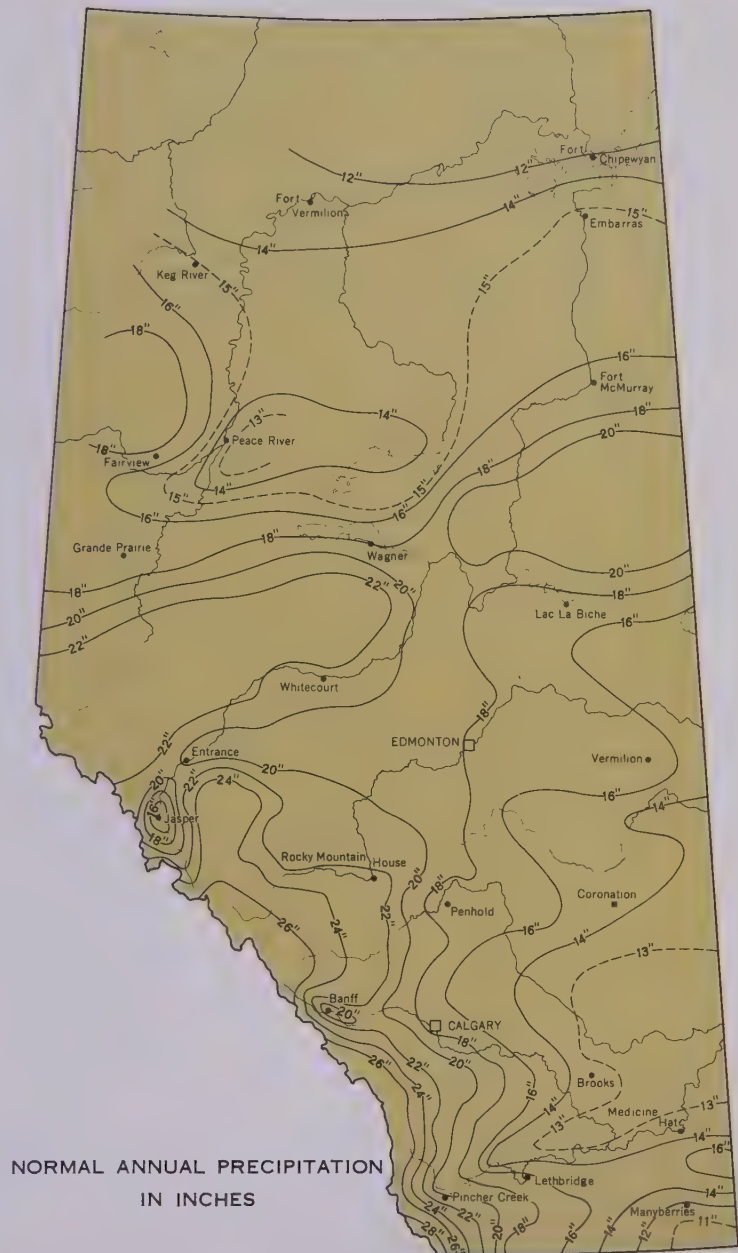


# CLIMATE

Alberta has the greatest number of hours of bright sunshine of all the provinces -- 2,000 to 2,200 annually. The climate of Alberta is predominantly continental and as such is subject to significant extremes in weather. As air from the west rushes down the eastern mountain slopes it is warmed, and the cold air from the north is deflected eastward. The climate is also affected by the low relative humidity which moderates both the high temperatures of summer and the low temperatures of winter.

Alberta, in the rain shadow of the Rocky Mountains, is relatively dry. Average annual precipitation ranges from 11 to 28 inches. The accompanying map shows marked variations. Precipitation is greatest along the foothills, diminishing rather rapidly toward the north, and is fairly heavy in a band from Jasper Park to Lac La Biche. This heavier precipitation is associated with the higher ground, most of which is heavily forested, and which separates the Arctic Ocean drainage basin from the Hudson's Bay drainage basin.

Rainfall is adequate over all of Alberta except the southeast area. The problem of aridity has been solved satisfactorily in parts of this region by irrigation. The seasonal pattern of precipitation favours the farmer in that about 50 per cent normally falls in the April to July period -- the growing season. Snowfall accounts for only 25 per cent of the total annual precipitation.



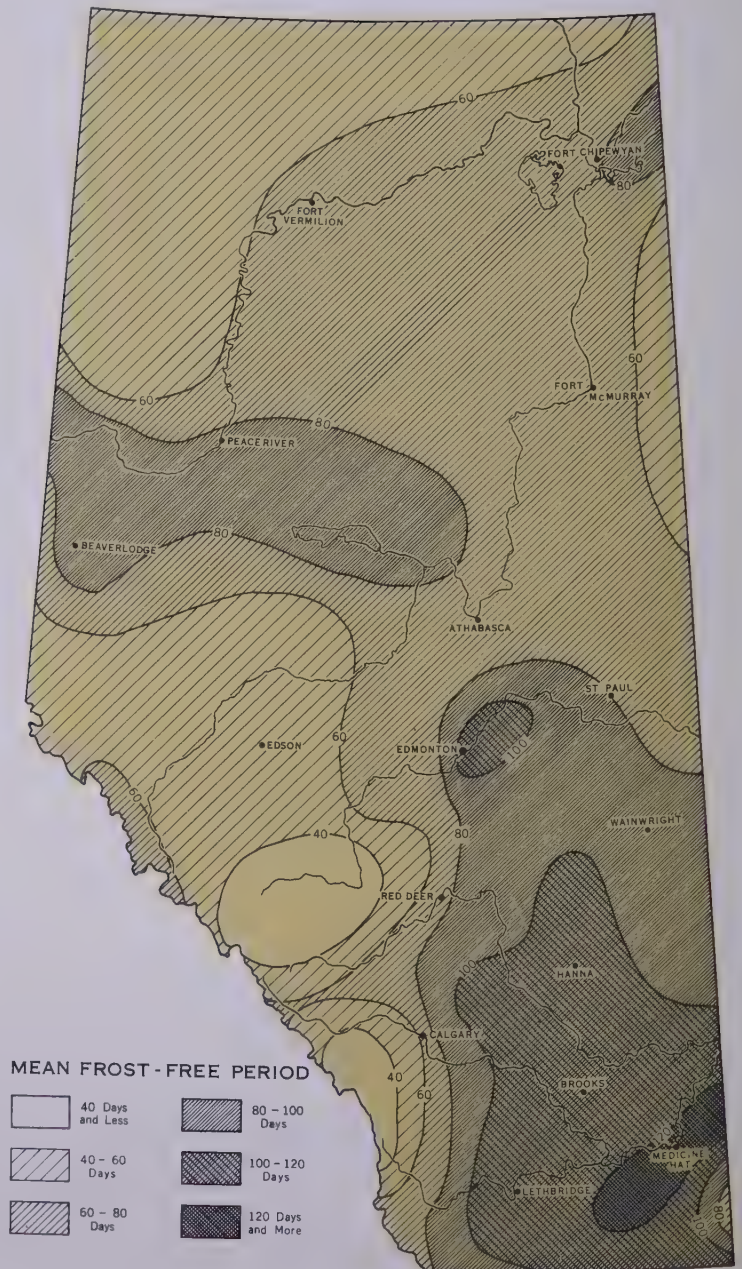
The southeast part of the province has an average annual precipitation of only about 12 inches, and high evaporation rates partly caused by frequent hot dry winds. In the west central part the annual precipitation approximates 20 inches; temperatures are

lower, evaporation is less and the growing season shorter. In the extreme north, as in the south, precipitation is about 12 inches per year, but temperatures are much cooler and evaporation rates low.

Generally, the more prolonged and widespread rains are caused by relatively warm moisture laden maritime air from the Pacific crossing the mountains and converging with the drier, cooler continental air from the north. This Pacific air is relatively unsaturated after crossing the mountain barrier and is lifted by the Polar air which, because it is cold and dense, flows underneath. On rising, the Pacific air becomes chilled and its moisture content then falls as rain. Some heavy rains in the south and east portion of the province may be due to a similar confluence of the warm, moist air from the Mississippi Basin and the cold Polar air.

The wind pattern over Alberta is complex. The mountains provide a steering and blocking effect. Winds may vary markedly in speed and direction over short distances. Over most of the settled areas the prevailing winds are westerly.

A famous wind in Alberta is the Chinook. The expression is properly used for the strong warm winds which blow eastward over the mountains. The Chinook blows most often in southwestern Alberta but areas in, or adjacent to, the foothills are often affected all the way from Calgary to the Peace River country. The air involved originates over the Pacific and is mild relative to that over the prairies during the winter. This mild air gains heat by compression as it comes down the eastern mountain slopes. Relatively strong winds aloft are required to force the mild air into descent over the prairies, or out of the mountain valleys from British Columbia. The Chinook then bursts forth -- typically near a valley such as the Crowsnest Pass of southwestern Alberta -- and fans out eastward. The velocity of Chinooks range from 25 to 50 miles per hour with gusts to over 100 miles per hour. The Chinook weakens rather rapidly about 100 miles from the mountains, although the mild air





may be carried farther east. Chinooks have their greatest frequency during the fall, winter and spring.

Within the province there is considerable variation in climate. Generally, at the same latitude, western Alberta tends to be warmer than the eastern portions and there are considerable variations in the north - south direction. In the winter the temperature gradient from south to north is steep but in the summer it is very slight. Thus summer temperatures are not as limiting to growing conditions in northern areas as the latitude might indicate.

"Degree-days", (a term obtained by assigning to any day a value equal to the number of degrees by which the mean temperature is below 65°F.) is often used by engineers to measure heating requirements. Using this standard, heating requirements are not exceptionally high. "Degree-days" per year rise from about 8,000 in southwest Alberta to 15,000 in the northeast corner. Fuel needs in the main settled areas are above those of southern British Columbia, but below those of Saskatchewan and Manitoba. Fuel costs are much lower than in any other province. Southern Alberta costs for fuel needs compare with those for southwest Quebec and eastern Ontario.

Monthly mean temperatures are above 50°F. for the five months May to September in most parts. Temperatures rise rapidly in April and fall rapidly in October. The peak heat period of summer is near the end of July, with typical highs of 85°F. in the south and 75°F. in the north.

Although average weather conditions are favourable, extreme deviations are so frequent that the production of crops becomes uncertain. Late spring and early fall frosts increase the risks in the northern and western areas. Fortunately the drought hazard is less in these areas. Spring frosts do not limit agriculture to the same extent as do early fall frosts. When ripening is delayed, fall frosts can be disastrous. Early seeding, and the use of phosphatic fertilizers hasten maturity, reducing the incidence of frost damage.

The mean frost-free period becomes shorter northward and westward from Medicine Hat and depends somewhat on topography. The Peace River country, for instance, enjoys a longer frost-free period than the surrounding areas. Low spots in the foothills or in northern areas may have frost in any month.

An indication of the suitability of Alberta's climate for agriculture is the fact that permanent agricultural settlement reaches its farthest northern point in Canada in the Peace River district. The favourable combination of long hours of sunlight, a sufficient number of frost-free days and adequate precipitation permit this situation.



*The sugar beet industry is centered in southern Alberta.*



Table 1  
STANDARD 30 YEAR (1931-1960) NORMALS OF TEMPERATURE, PRECIPITATION, AND FROST DATA, ALBERTA WEATHER STATIONS

TEMPERATURE (DEGREES FAHRENHEIT)										PRECIPITATION (INCHES)										FROST DATA									
Station	Elevation (feet)	Lowest	Highest	January		July		Mean Daily Max.	Mean Daily Min.	Precip.	Mean Monthly Total Precip.					Period(yrs) Frost Data Collection	Mean Date		First in Fall	Frost-free Period		Shortest (days)	Longest (days)	Mean (days)					
				Max.	Min.	Max.	Min.				April	May	June	July	Spring		Summer												
1 Alix	2585	-64	104	23	-5	80	47	17.11	57.5	1.08	1.57	2.98	2.52	43	June 5	Aug. 26	82	124											
2 Anthracite	4495	-47	99	22	4	74	44	18.34	64.3	1.59	1.95	2.68	1.83	22	June 24	Aug. 23	60	106											
3 Athabasca	1690	-61	101	12	-9	77	44	18.27	60.2	.82	1.80	2.77	3.00	29	June 19	Aug. 17	59	87											
4 Baile	4583	-60	94	22	4	73	44	18.48	79.3	1.38	1.77	2.45	1.67	54	June 4	Aug. 16	54	96											
5 Bassano	2625	-																											
6 Beaverlodge	2500	-54	98	16	-1	72	48	17.91	68.1	.83	1.60	2.22	2.52	19	May 20	Sept. 18	121	159											
7 Beaver Mines	4218	-50	98	27	7	76	44	24.36	122.6	2.15	2.44	3.70	1.41	16	June 16	Aug. 10	55	81											
8 Berwyn	2148	-51	92	6	-12	73	46	16.06	62.3	.55	1.23	2.36	2.74	2	June 1	Aug. 28	88												
9 Brzeau	3700	-																											
10 Brooks	2487	-50	104	20	-3	82	52	13.55	40.7	.85	1.61	2.26	1.49	34	May 27	Sept. 7	103	132											
11 Buffalo Head Prairie	1100	-64	98	1	-15	74	48	14.96	48.2	.67	1.49	2.09	2.41	17	June 13	Aug. 25	73	97											
12 Caldwell	4000	-40	98	26	10	77	48	25.59	126.3	2.56	2.90	4.21	1.56																
13 Calcutta	-	-																											
14 Calgary	3528	-49	97	24	4	75	49	17.44	58.5	1.36	2.03	3.45	2.30	46	June 3	Sept. 3	92	127											
15 Camar	2200	-57	98	17	-6	75	48	19.16	50.4	1.16	2.06	3.21	3.43	35	June 8	Aug. 27	80	138											
16 Campsie	2200	-61	100	15	-7	74	47	18.61	49.5	.95	1.84	3.10	3.73	38	June 18	Aug. 22	65	94											
17 Camrose	2215	-58	101	14	-7	75	50	15.32	38.0	.99	1.58	2.53	2.74	20	June 5	Sept. 5	92	135											
18 Cardston	3826	-46	102	28	9	79	50	18.04	65.4	1.39	2.38	3.59	1.62	35	May 30	Sept. 10	103	150											
19 Carrot Creek Forestry	3500	-																											
20 Carway (Twin Lakes)	4000	-46	98	29	10	75	50	20.37	95.1	1.80	2.42	3.61	1.56	32	June 7	Sept. 4	89	149											
21 Claresholm	3390	-						15.70	65.7	1.35	1.73	2.65	1.29	17	June 1	Sept. 3	94	123											
22 Coalspur	3850	-						19.62	58.1	1.06	1.41	3.29	3.49	17	July 13	July 19	6												
23 Cold Lake	-	-55	97	7	-11	73	52	19.91	87.0	1.56	2.02	2.53	1.25																
24 Coleman	4312	-																											
25 Coronation	2618	-48	100	13	-3	76	52	14.69	44.3	1.01	1.00	2.21	2.64	24	June 1	Sept. 3	94	137											
26 Cowley Airport	3878	-47	99	28	6	76	47	19.62	86.4	1.43	2.32	3.28	1.55	12	June 9	Aug. 29	81	136											
27 Drumheller	2255	-								.86	1.30	2.37	2.00	17	May 23	Sept. 10	110	147											
28 Dunsin	-	-						16.43	80.3	.66	.96	2.49	2.37	36	June 9	Aug. 27	79	111											
29 Edmonton (International)	2255	-46	95	13	-4	73	50	18.48	52.9	1.06	1.68	3.36	3.21																
30 Edmonton (Municipal)	1305	-57	99	15	-2	74	52	18.64	53.8	1.10	1.83	3.15	3.34	80	May 29	Sept. 6	100	144											
31 Edmonton (Namao)	2219	-36	93	12	-1	73	52	18.04	56.0	1.14	1.68	3.30	2.93	35	June 1	Aug. 19	59	127											
32 Edson	2985	-55	100	19	-2	73	44	20.85	58.7	1.06	2.05	3.59	3.66	32	June 15	Aug. 18	64	103											
33 Elk Point (Glendon)	1920	-64	102	9	-11	75	48	16.32	44.3	.86	1.36	2.91	2.77	37	June 10	Aug. 18	64	103											
34 Elmworth	2450	-70	95	18	-7	74	44	17.00	63.0	.89	1.28	1.97	2.59	24	June 14	Aug. 11	51	88											
35 Embarras Airport	775	-63	93	1	-18	75	51	15.35	51.9	.66	1.32	1.72	2.21	12	May 25	Sept. 15	113	144											
36 Empress	2000	-																											
37 Entrance	3216	-60	100	24	1	74	43	19.98	55.7	1.22	2.10	3.59	2.72	32	June 29	Aug. 10	42	75											
38 Exshaw	4280	-						20.14	76.1	1.63	2.54	3.41	2.02	17	May 31	Sept. 13	105	147											
39 Fairview	2160	-49	97	11	-6	72	49	17.70	73.7	.91	1.43	2.33	2.55	19	May 25	Sept. 7	105	139											
40 Five Lakes	2368	-																											
41 Foremost	2922	-	106	-	-	83	52			.90	1.59	2.82	1.36	22	May 29	Aug. 10	42	75											
42 Fort Chipewyan	714	-60	93	-4	-20	75	51	31.83	135.7	1.15	3.47	1.99	1.93	39	June 10	Aug. 23	74	118											
43 Fort MacLeod	3128	-47	110	27	9	81	53	17.67	52.9	1.28	2.39	3.60	1.67	53	May 21	Sept. 16	118	165											
44 Fort Vermilion	950	-78	103	0	-19	75	49	13.92	50.9	.55	1.34	1.83	2.21	41	June 13	Aug. 17	65	104											
45 Gen	2464	-																											
46 Glassford	2735	-																											
47 Gleichen	2952	-53	103	21	-1	78	50	14.99	47.4	1.16	1.70	2.70	2.02	45	May 29	Sept. 9	101	152											
48 Goodfare	2700	-						19.01	73.0	.60	1.80	2.45	3.13																
49 Grande Prairie (Airport)	2190	-62	94	12	-6	72	49	17.27	65.5	.71	1.57	2.47	2.38	9	May 23	Sept. 4	104	141											
50 Groton	3000	-						13.04	44.6	1.00	1.41	2.49	1.40	28	June 9	Aug. 26	78	118											
51 Grouard	1900	-60	98	13	-7	74	48	17.56	56.0	.71	1.67	2.66	2.42	25	May 25	Sept. 5	103	149											
52 Hanna	2877	-50	102	16	-2	78	52	14.39	41.5	.86	1.28	2.49	2.27	4	June 9	Aug. 12	64												
53 Hardisty	2052	-						14.37	29.2	.86	1.13	2.48	2.95	25	June 28	Aug. 3	36	91											
54 Hermatton	3500	-						16.66	41.9	.79	1.57	3.34	3.13	20	June 16	Aug. 16	61	93											
55 Helder	2300	-						18.00	54.7	.93	1.51	2.73	2.91	20	June 8	Aug. 28	81	116											
56 High Prairie	1968	-60	97	12	-7	74	48																						
57 High River	3800	-49	99	28	4	76	45	19.14	68.7	1.77	2.17	3.57	2.08	39	June 15	Aug. 12	58	108											
58 Hillsdon	2940	-52	101	20	-3	73	48	19.62	56.5	1.49	2.04	3.67	2.95	16	June 4	Aug. 30	59	130											
59 Hillspring (Caldwell)	4000	-																											
60 Hughenden	2277	-59	104	13	-7	79	50	14.67	38.3	.90	1.27	2.44	2.43	10	June 3	Sept. 2	91	131											

61	Iron River	1900	- 60	97	11	-11	75	48	14.61	38.7	.75	1.41	2.75	2.28	23	June 13	Aug. 20	68	101	^	61
62	Jasper	3480	- 52	98	21	2	74	45	15.98	49.2	.73	1.31	2.15	1.96	33	June 12	Aug. 24	73	128	^	62
63	Jenior	2480	- 56	105	17	- 5	83	50	12.49	36.4	.73	1.44	1.97	1.22	32	May 31	Sept. 12	104	151	68	63
64	Kananaskis	4130	- 50	93	27	4	72	44	25.09	102.0	2.28	3.45	4.36	2.57	11	June 27	Aug. 24	58	82	64	32
65	Keg River	1402	- 67	90	6	-16	74	47	15.44	50.9	.73	1.59	2.01	2.46	15	June 20	Aug. 16	57	79	^	65
66	Kinuso	1928	-	-	-	-	-	-	18.92	55.8	1.11	1.70	2.07	2.09	17	June 10	Sept. 3	85	115	42	66
67	Lac La Biche	1835	- 55	93	10	- 7	73	52	17.83	58.2	1.02	1.56	2.64	2.83	17	May 26	Sept. 9	106	125	75	67
68	Lacombe	2763	- 56	101	19	- 5	76	49	16.35	48.2	1.32	2.02	3.48	2.45	43	June 9	Aug. 26	76	136	33	68
69	Lake Louise	5082	- 63	94	19	- 7	71	38	30.37	193.3	2.08	1.93	2.46	1.96	34	July 10	July 21	11	58	^	69
70	Lehrbidge Airport	3018	- 45	104	27	7	80	52	17.23	65.7	1.36	2.09	3.20	1.69	26	May 25	Sept. 13	111	147	80	70
71	Lloydminster	2120	- 58	100	-	-	76	52	-	-	.84	1.23	2.51	2.46	38	June 3	Aug. 31	89	138	^	71
72	Lundbreck (Playle Ck.)	3918	- 52	108	29	3	78	41	19.28	82.9	1.46	2.12	3.58	1.90	36	July 2	Aug. 1	30	86	^	72
73	Lyndon	4100	-	-	-	-	-	-	20.11	78.1	1.76	2.47	3.90	1.94	27	June 16	Aug. 22	67	101	^	73
74	McMurray Airport	1216	- 59	96	4	-16	76	48	16.85	50.0	.75	1.31	2.36	2.93	2	June 16	Aug. 22	67	101	^	74
75	Magrath	-	-	99	-	-	79	52	-	-	.97	1.32	3.01	2.22	23	May 21	Sept. 15	117	159	75	75
76	Manyberries	3000	- 45	105	21	1	83	53	11.92	38.7	.97	1.34	2.47	1.32	23	May 21	Sept. 15	117	159	75	76
77	Maybeme Forestry	3400	-	-	-	-	-	-	-	-	2.36	4.33	4.43	4.43	12	June 5	Aug. 26	82	128	^	77
78	Meanook	2265	-	-	-	-	-	-	18.73	52.9	.90	2.06	3.01	3.03	19	May 22	Sept. 9	110	139	91	78
79	Medicine Hat Airport	2365	- 51	108	22	2	83	55	14.29	48.7	.98	1.64	2.32	1.36	55	May 15	Sept. 18	126	152	98	79
80	Mountain View	4325	-	-	-	-	-	-	22.56	107.6	2.29	2.83	3.71	1.43	-	-	-	-	-	-	80
81	Naco	2400	- 58	105	14	- 7	79	49	13.24	41.6	.93	1.09	2.36	1.95	18	June 2	Sept. 4	94	130	71	81
82	Nordegg	4300	- 53	91	20	1	69	41	21.73	84.5	1.34	2.42	4.18	3.17	29	June 30	Aug. 2	33	98	82	82
83	North Cooking Lake	2430	-	-	-	-	-	-	-	-	-	-	-	-	18	May 31	Sept. 17	109	130	90	83
84	Okotoks	3448	-	-	-	-	-	-	-	-	-	-	-	-	18	May 31	Sept. 17	109	130	90	84
85	Olds	3413	- 47	99	22	1	74	48	18.21	49.0	1.17	2.07	3.56	2.74	35	June 3	Sept. 8	97	161	49	85
86	Patricia	2403	-	-	-	-	-	-	-	-	.60	1.15	1.98	2.19	15	May 22	Sept. 11	112	129	84	86
87	Peace River	1820	- 57	98	1	-17	74	47	12.26	30.5	.83	1.82	3.24	3.72	26	June 2	Sept. 1	91	164	39	87
88	Peavine	2279	- 53	93	15	- 1	75	48	19.23	50.1	.83	1.82	3.24	3.72	26	June 2	Sept. 1	91	164	39	88
89	Pekisko	4721	- 52	97	27	4	72	41	25.16	107.1	2.33	2.97	4.53	2.09	40	June 28	Aug. 4	36	100	^	89
90	Penhold	-	- 50	97	16	- 3	74	50	17.30	47.4	1.10	1.85	3.27	2.81	48	June 1	Sept. 7	98	141	^	90
91	Pincher Creek	3758	- 48	97	27	7	77	47	20.62	84.6	1.75	2.55	3.77	1.50	15	May 30	Sept. 8	101	134	61	91
92	Pokapine	2440	-	-	-	-	-	-	-	-	-	-	-	-	15	May 30	Sept. 8	101	134	61	92
93	Ponoka	2810	-	-	-	-	-	-	-	-	-	-	-	-	45	June 1	Aug. 31	91	144	^	93
94	Ranfurly	2250	- 60	105	13	- 7	76	50	17.33	50.7	.97	1.51	2.63	2.84	45	June 1	Aug. 31	91	144	47	94
95	Raymond	3123	- 45	100	28	- 7	82	51	15.98	62.4	1.68	1.66	2.45	1.21	15	May 19	Sept. 15	119	144	98	95
96	Red Deer (Penhold) (A)	2965	- 59	99	18	- 2	74	50	21.44	49.2	1.29	2.82	3.72	3.26	28	June 9	Aug. 27	79	113	48	96
97	Rocky Mountain House	3330	- 44	91	20	1	72	48	21.20	66.9	1.48	2.23	3.69	3.32	6	June 4	Sept. 2	90	108	58	97
98	Sedgewick	2194	- 55	103	18	- 2	78	50	15.65	35.1	1.02	1.52	3.04	2.73	22	May 31	Sept. 8	100	144	51	98
99	Seven Persons	2480	-	-	-	-	-	-	13.78	47.6	.96	1.51	2.42	1.38	21	May 30	Sept. 24	117	-	99	99
100	Sion	2315	- 63	102	16	- 6	76	48	17.92	57.2	.92	1.63	2.95	3.38	36	June 15	Aug. 24	70	133	^	100
101	Slave Lake	1905	- 55	100	11	- 8	73	48	18.32	56.0	.85	1.71	2.60	3.02	26	June 9	Aug. 26	78	124	^	101
102	Springdale	3000	- 66	95	19	- 7	73	44	20.03	57.4	1.48	2.15	3.52	3.28	37	June 23	Aug. 10	48	93	^	102
103	Stettler	2700	- 52	100	17	- 1	77	50	16.06	42.7	.81	1.53	3.08	2.63	32	May 26	Sept. 3	100	155	^	103
104	Strathmore	3160	-	-	-	-	-	-	-	-	-	1.88	3.14	2.17	35	May 28	Sept. 8	104	149	53	104
105	Suffield	2543	- 53	105	19	0	82	54	12.62	36.0	.74	1.53	2.29	1.32	10	May 30	Sept. 9	102	126	70	105
106	Taber	2650	- 44	105	26	4	80	54	15.09	49.6	1.28	1.67	3.10	1.56	-	-	-	-	-	-	106
107	Telfordville	2250	-	-	-	-	-	-	-	-	-	-	-	-	26	June 12	Aug. 21	70	115	^	107
108	Thorhild (Radway)	2075	- 61	101	13	- 9	76	48	16.27	44.8	.89	1.62	2.70	2.80	26	June 12	Aug. 21	70	115	^	108
109	Thorsby	2450	- 55	98	17	- 3	74	49	17.93	42.6	1.21	1.81	3.32	3.41	18	June 2	Sept. 9	99	140	64	109
110	Three Hills	2936	- 55	104	18	- 6	79	46	15.32	35.3	1.03	1.73	3.04	2.17	39	June 13	Aug. 21	69	112	^	110
111	Trochu	-	-	-	-	-	-	-	16.95	51.1	1.34	1.54	2.48	2.12	-	-	-	-	-	-	111
112	Turner Valley	-	- 45	90	28	0	71	46	22.73	87.7	2.59	2.42	4.22	2.90	-	-	-	-	-	-	112
113	Vauxhall	2555	- 56	105	24	2	81	51	13.03	38.4	.74	1.56	2.20	1.56	32	May 27	Sept. 13	109	144	63	113
114	Vegreville	2082	-	102	-	-	77	50	-	-	.68	1.49	2.57	2.88	8	June 8	Aug. 28	81	104	52	114
115	Vermilion Airport	2037	- 55	99	10	- 7	75	49	15.76	42.3	.86	1.17	2.50	2.58	24	June 8	Aug. 23	75	112	38	115
116	Viking	2230	- 69	103	12	- 6	76	49	15.86	40.8	.86	1.34	2.72	2.75	26	June 3	Sept. 1	90	144	40	116
117	Vulcan	3442	-	-	-	-	-	-	16.10	49.9	1.22	2.09	2.98	1.85	6	May 20	Sept. 11	114	132	98	117
118	Wabamun	2386	-	-	-	-	-	-	-	-	-	2.07	2.98	1.85	-	-	-	-	-	-	118
119	Wabasca	1720	- 61	102	12	- 9	74	53	13.22	32.6	.35	1.07	2.71	2.01	22	May 29	Sept. 11	105	140	46	119
120	Wagner	1915	- 51	92	10	- 6	71	50	16.57	54.4	.85	1.54	2.21	2.53	8	June 2	Aug. 30	89	116	50	120
121	Wastna (Hemanka)	2430	- 54	104	13	- 8	80	48	12.72	32.1	.66	1.11	2.25	2.02	33	June 7	Aug. 28	82	124	39	121
122	Waterton Lakes (Belly R.)	4500	-	-	-	-	-	-	42.31	212.3	4.15	3.98	5.52	2.03	-	-	-	-	-	-	122
123	Waterton Park (H.Q.)	4200	-	-	27	10	75	51	49.31	228.5	4.43	3.54	5.17	1.88	3	June 3	Sept. 10	99	-	-	123
124	Wetaskiwin	2480	- 58	99	17	- 3	75	50	18.27	53.5	1.32	1.74	3.06	3.14	43	May 31	Sept. 3	95	137	38	124
125	Whitcourt	2430	- 58	93	15	- 5	73	47	20.31	60.3	1.20	1.85	2.88	3.86	6	June 22	Aug. 15	54	79	^	125
126	Winnifred	2725	-	-	-	-	-	-	13.86	49.4	1.12	1.76	2.38	1.21	-	-	-	-	-	-	126

(\*) Indicates less than 31 days. July 15th is arbitrarily taken as the critical date between spring and fall frosts.

# GEOLOGY

The Precambrian or Canadian Shield in Alberta is overlain by deposits from the Palaeozoic, Mesozoic and Cenozoic eras. The Canadian Shield consists of a series of igneous intrusions of great variety, and altered or metamorphosed sedimentary and volcanic formations. The Palaeozoic rocks consist mainly of limestone, dolomite and shale. During the Cretaceous period of the Mesozoic era sandstones of continental origin and shales of marine origin covered the Palaeozoic rocks. Sediments of the Tertiary period of the Cenozoic era overlie these sandstone and shale layers of the Mesozoic era. These Tertiary formations lie in a broad belt running northwest-southeast through western Alberta.

The Rocky Mountains were formed over 50 million years ago by pressure exerted from the west which folded and pushed sedimentary strata eastward over other rock formations. The harder, more resistant Palaeozoic rocks now stand up as the Rocky Mountains, and east of them the foothills are formed by the softer Mesozoic sandstones and shales.

Oil and gas reservoirs are found mainly in Cretaceous, Mississippian and Devonian formations. The major oil fields in Alberta are east of the front ranges of the mountains. Gas fields are widely distributed throughout the province.

The Athabasca Oil Sands cover some 20,000 square miles in northern Alberta. The exposed portion of the oil sands make up a small percentage of the over-all area and can be found along the Athabasca River at Fort McMurray. These sands are made up of loose sand, silt and clay impregnated with a very viscous asphaltic oil.

There are three major zones of coal formation in Alberta. The Blairmore-Kootenay horizon is the oldest, and is of Early Cretaceous age. The two younger horizons, the Belly River and Edmonton formations, are of Late Cretaceous age. Folding and faulting of strata have brought the older formations to the surface in the foothills region.

During the Middle Devonian period a sea that covered part of Alberta dried up leaving behind large deposits of salt. There are four salt beds in Alberta, the most extensive of which covers a band 100 miles wide from Fort Vermilion in the north to Princess in the south.

Limestone and dolomite deposits, occurring mainly in Cambrian and Devonian Carboniferous rocks are exposed in the Rocky Mountains in the southwest of the province; the Devonian rocks also outcrop in northeastern Alberta.

Sand and gravel deposits of two ages are widely distributed throughout Alberta. Quartzite gravels and sands of Tertiary age are found capping many of the hill areas in the province, such as the Cypress, Hand, Swan and Clear Hills. These sands and gravels also are widely distributed in western Alberta, and on the floors of pre-glacial stream channels throughout the province. Gravels and sands of the glacial period, containing much Precambrian rock material, are found on the floors of present-day rivers and also



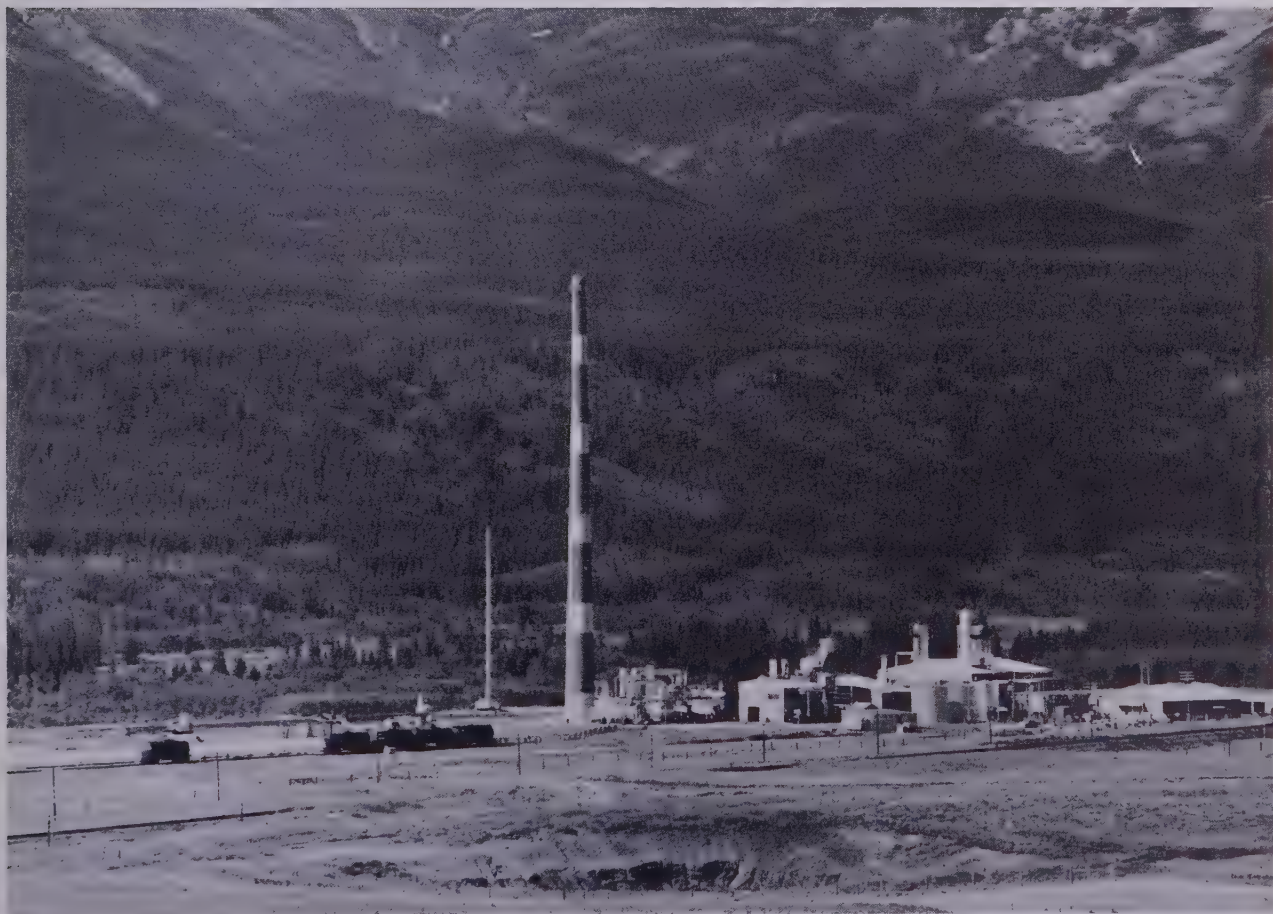
scattered among the glacial deposits across Alberta.

Clays are found principally in glacial and post-glacial deposits. These clays are not suitable for fine china but are used in the manufacture of cement, brick, tile and other ceramic products. Shales in Alberta are found in Cretaceous and older strata. Shales of Cretaceous and of Tertiary age are suitable for brick, tile and the manufacture of lightweight aggregate. The potential of many older shales is as yet unknown.

Gypsum deposits of Middle Devonian age occur at Peace Point and along the Salt, Slave and Little Buffalo Rivers in the extreme northeastern part of the province, and in the subsurface at Fort McMurray. Deposits of Triassic gypsum are exposed north of Jasper at Mowitch Creek and Fetherstonhaugh Creek. In southern Alberta, gypsum deposits of Late Devonian age can be found at Head Creek in the Highwood Range.

Iron-rich deposits of Late Cretaceous age have been found in the Crowsnest Pass. The iron is contained in black magnetic sands interbedded with coarse sandstones. Other extensive deposits have been found while drilling for oil in the Peace River country. This ore is of low grade and consists mainly of oolitic hydrous iron oxide.

Other industrial or economic minerals found in Alberta include phosphate, quartz-rich sand, sodium sulphate, marl, pumicite, talc, and bentonite. The economic significance and a fuller explanation of these and other minerals will be found in the Industrial Minerals section.



*One of many plants in Alberta extracting sulphur from natural gas.*

# NET VALUE OF PRODUCTION

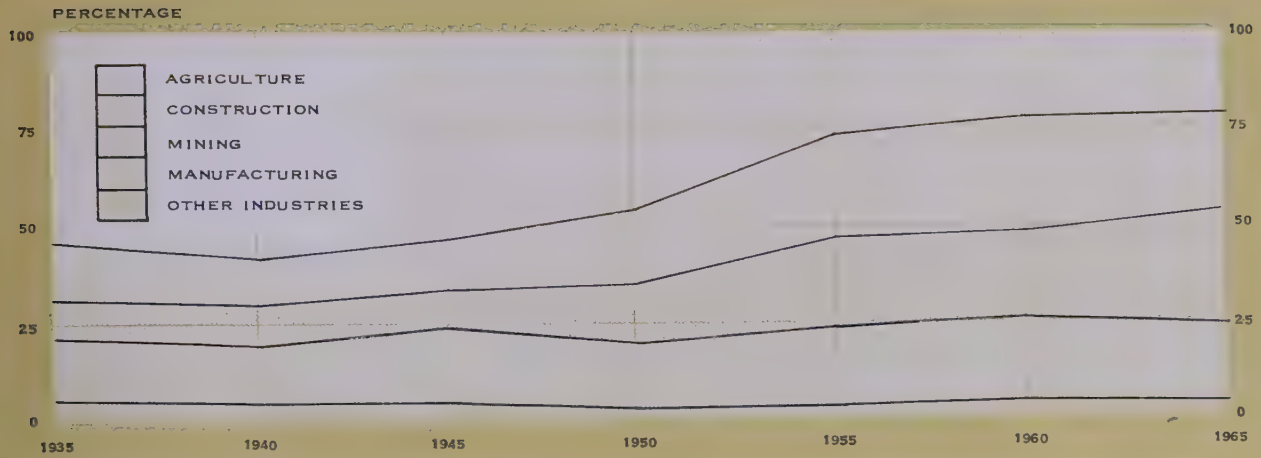
The primary industries: agriculture, mining, trapping, forestry, fishing and the generation of electricity; and the secondary industries: manufacturing and construction, together form the framework of the economy. During the past 20 years, marked shifts have occurred in their rankings as to economic importance. Prior to 1945, agriculture provided the main contribution to total value of production, and the economy was highly vulnerable to yearly fluctuations resulting from price and climatic variations. The province has since developed a more diversified, and hence more stable, economic base. In 1966, mining production accounted for approximately one-third of the total net value of production while the agriculture, construction and manufacturing industries each produced approximately one-fifth.

The net value of production is the measure of "value added" by each industry to the total value of production. The measure is determined by deducting from the total value of output, the costs of all materials, supplies, fuel, and electricity consumed in the production process.

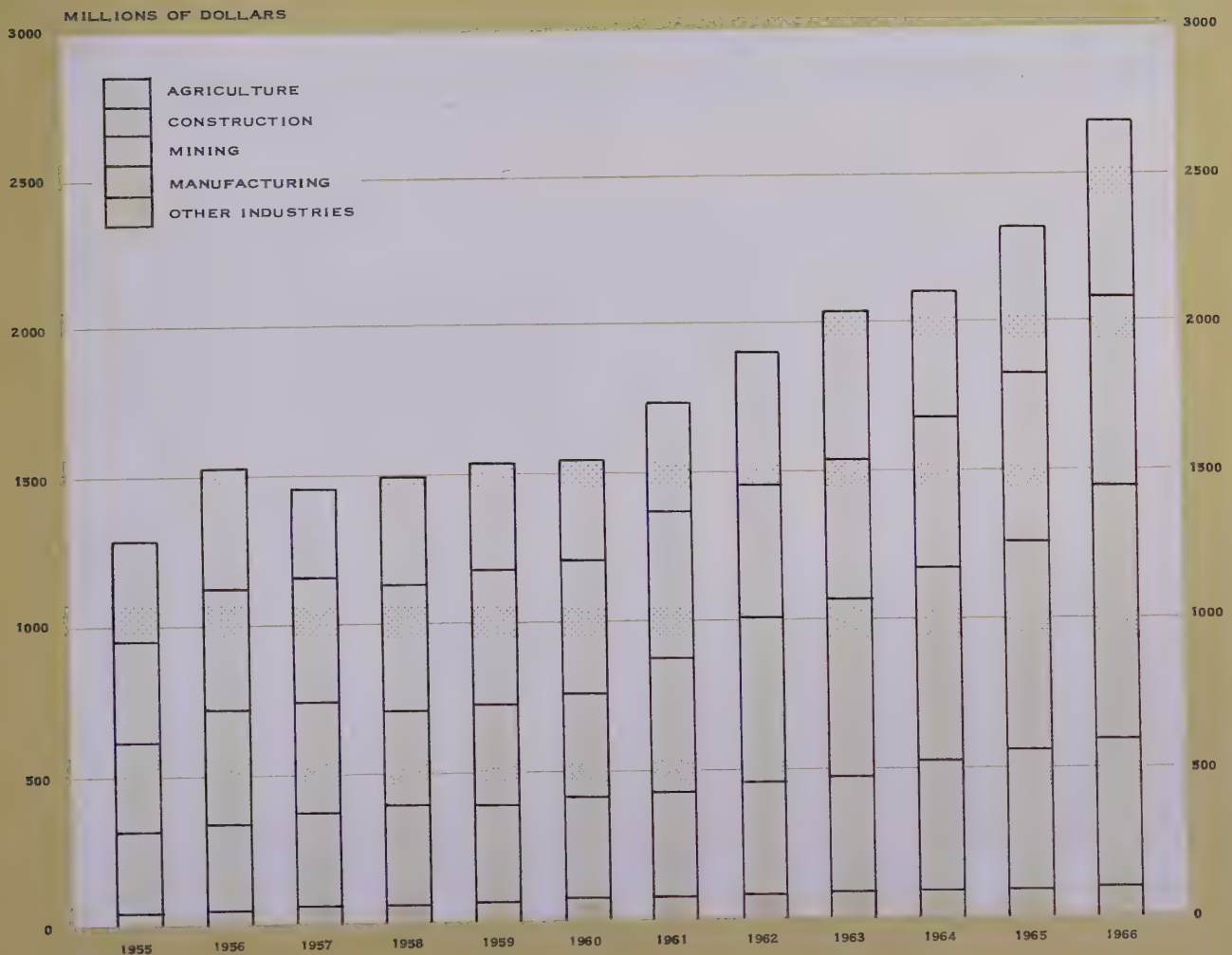
"Net value" is more useful than "gross value" for comparing major industries because it rules out duplication within or between industries. For example, rough lumber produced by a sawmill becomes the raw material for a planing mill. The planing mill in turn processes the lumber. Planed lumber is shipped to a sash and door factory where the dressed lumber is converted into windows and doors. A total of gross production figures for the three industries specified in the example would include the value of the basic rough lumber more than once, resulting in a cumulatively exaggerated figure. Net value of production, measuring only the value added by each industry, is a more realistic figure to use for showing actual contributions to the total economy.

Total net value of production for all industries increased six and one-half times in the 1945-1966 period, from \$403 million to \$2,700 million. Although in dollar terms the net value of agricultural production has increased since 1945, its proportion of total net production in Alberta has decreased from 53 per cent to 22 per cent. The most marked increase has occurred in mining, reflecting the growth of the oil industry. Increasing from \$42 million in 1945 to an estimated \$850 million in 1966, the percentage contribution to the total net value rose from 10 per cent to 32 per cent. Similarly, the manufacturing and construction industries have experienced steady growth from a combined total net value of production of \$132 million in 1945 to an estimated \$1,143 million in 1966.

Per capita net value of production in Alberta increased from \$499 per capita in 1945 to \$1,830 per capita in 1966.



NET VALUE OF PRODUCTION  
PERCENTAGE COMPARISON BY INDUSTRY, 1935-1965



NET VALUE OF PRODUCTION, BY INDUSTRY, ALBERTA, 1955-1966



OF PRODUCTION AND PER CAPITA NET VALUE OF PRODUCTION  
CANADA WESTERN CANADA AND ALBERTA,  
1935 - 1963

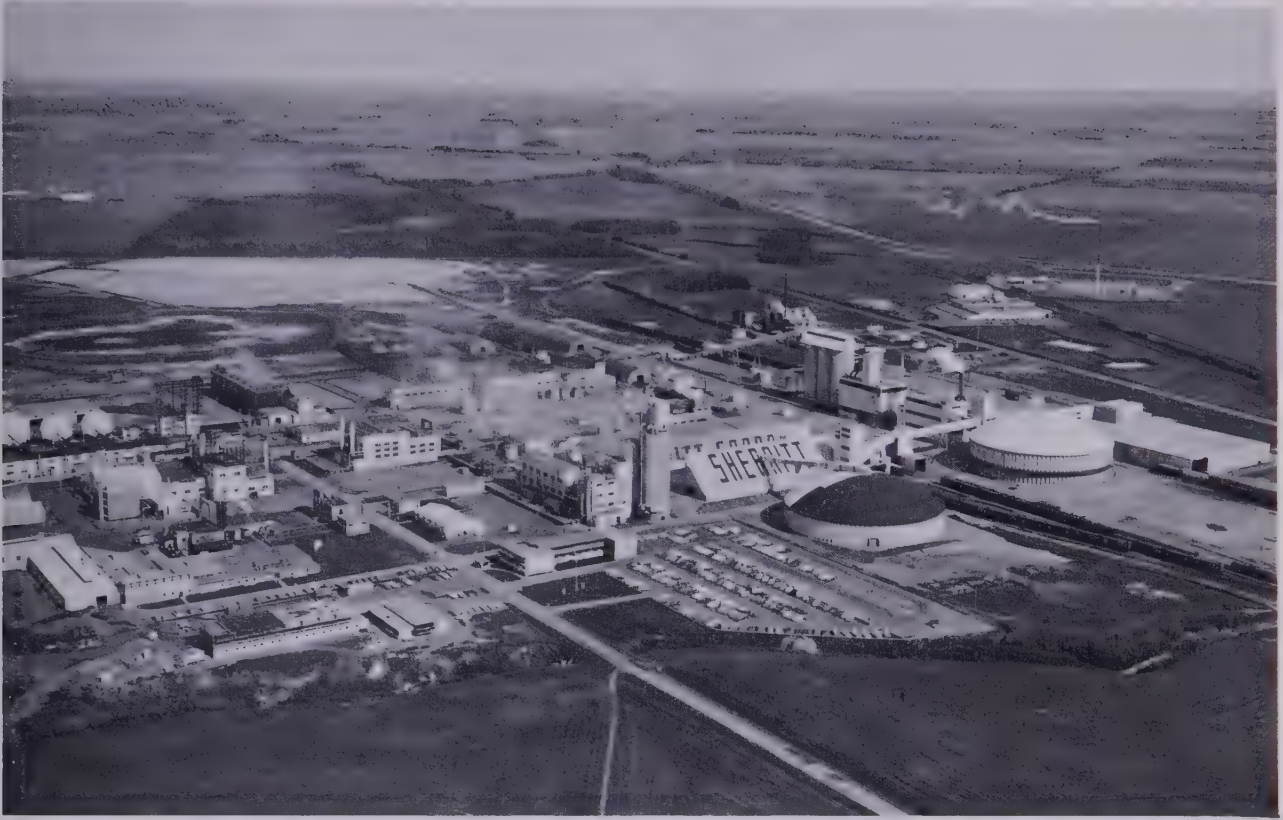
	NET VALUE OF PRODUCTION			PER CAPITA NET VALUE OF PRODUCTION		
	Canada \$	Western Canada \$	Alberta \$	Canada \$	Western Canada \$	Alberta \$
1935	2,352,320,000	567,781,000	147,345,000	217	180	193
1940	3,730,225,000	964,747,000	252,713,000	328	298	320
1945	6,307,666,000	1,685,409,000	403,380,000	523	506	499
1950	10,928,879,000	2,953,972,000	765,353,000	797	804	838
1955	15,849,948,000	4,360,480,000	1,289,642,000	1,010	1,043	1,182
1956	17,782,038,000	5,173,241,000	1,524,329,000	1,106	1,208	1,357
1957	17,919,713,000	4,780,610,000	1,451,644,000	1,079	1,082	1,247
1958	18,073,718,000	4,827,988,000	1,494,941,000	1,058	1,063	1,240
1959	18,612,010,000	4,894,632,000	1,537,090,000	1,065	1,075	1,232
1960	19,107,294,000	5,230,297,000	1,548,519,000	1,069	1,101	1,199
1961	19,297,126,000	5,136,131,000	1,738,585,000	1,058	1,060	1,305
1962	21,402,138,000	6,208,705,000	1,903,899,000	1,153	1,258	1,390
1963	22,871,847,000	6,808,035,000	2,047,788,000	1,210	1,355	1,458

Table 3

NET VALUE OF PRODUCTION BY INDUSTRIES, ALBERTA -- 1935 - 1966

	<u>1935</u>		<u>1940</u>		<u>1945</u>		<u>1950</u>		<u>1955</u>		<u>1956</u>		<u>1957</u>		<u>1958</u>	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	79,394	53.9	147,781	58.5	212,784	52.8	346,074	45.2	339,094	26.3	402,204	26.4	292,220	20.1	358,362	24.0
Forestry	1,310	0.9	2,409	1.0	6,299	1.6	8,954	1.2	13,163	1.0	14,701	1.0	15,852	1.1	13,174	0.9
Fisheries	139	0.1	222	0.1	742	0.2	437	0.1	688	0.1	790	0.1	854	0.1	879	-
Trapping	1,065	0.7	1,893	0.7	2,067	0.5	1,889	0.2	2,078	0.2	1,132	0.1	1,044	0.1	1,103	0.1
Mining	16,096	10.9	27,851	11.0	41,713	10.3	122,543	16.0	303,752	23.5	380,800	25.0	378,209	26.0	309,218	20.7
Electric Power	4,572	3.1	5,810	2.3	8,227	2.0	13,863	1.8	28,858	2.2	32,771	2.1	36,475	2.5	40,588	2.7
Manufacturing	23,769	16.1	37,747	14.9	78,548	19.5	123,893	16.2	263,309	20.4	285,831	18.7	312,037	21.5	339,439	22.7
Construction	21,000	14.3	29,000	11.5	53,000	13.1	147,700	19.3	338,700	26.3	406,100	26.6	414,953	28.6	432,179	28.9
TOTAL	147,345	100.0	252,713	100.0	403,380	100.0	765,353	100.0	1,289,642	100.0	1,524,329	100.0	1,451,644	100.0	1,494,941	100.0
	<u>1959</u>		<u>1960</u>		<u>1961</u>		<u>1962</u>		<u>1963</u>		<u>1964<sup>a</sup></u>		<u>1965<sup>a</sup></u>		<u>1966<sup>a</sup></u>	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	356,753	23.2	341,881	22.1	368,804	21.2	442,355	23.2	507,790	24.8	428,848	20.4	489,396	21.0	590,000	22.0
Forestry	16,671	1.1	20,780	1.3	17,330	1.0	19,984	1.1	19,440	1.0	26,000	1.2	24,000	1.0	22,000	0.8
Fisheries	1,016	0.1	1,158	0.1	883	0.1	714	-	676	-	799	-	677	-	800	-
Trapping	1,197	0.1	2,070	0.1	1,715	0.1	1,551	0.1	1,949	0.1	1,834	0.1	1,887	0.1	1,760	0.1
Mining	337,198	21.9	349,115	22.6	460,199	26.5	561,933	29.5	593,735	29.0	652,515	31.0	704,063	30.3	850,000	31.7
Electric Power	45,761	3.0	48,587	3.1	52,608	3.0	56,627	3.0	59,547	2.9	63,955	3.0	69,406	3.0	75,000	2.8
Manufacturing	327,409	21.3	339,377	21.9	346,395	19.9	373,998	19.6	394,317	19.2	433,187	20.5	463,943	20.0	500,000	18.6
Construction	451,086	29.3	445,551	28.8	490,651	28.2	446,737	23.5	470,334	23.0	501,026	23.8	571,332	24.6	643,060	24.0
TOTAL	1,537,090	100.0	1,548,519	100.0	1,738,585	100.0	1,903,899	100.0	2,047,788	100.0	2,108,164	100.0	2,324,704	100.0	2,682,620	100.0

Estimates



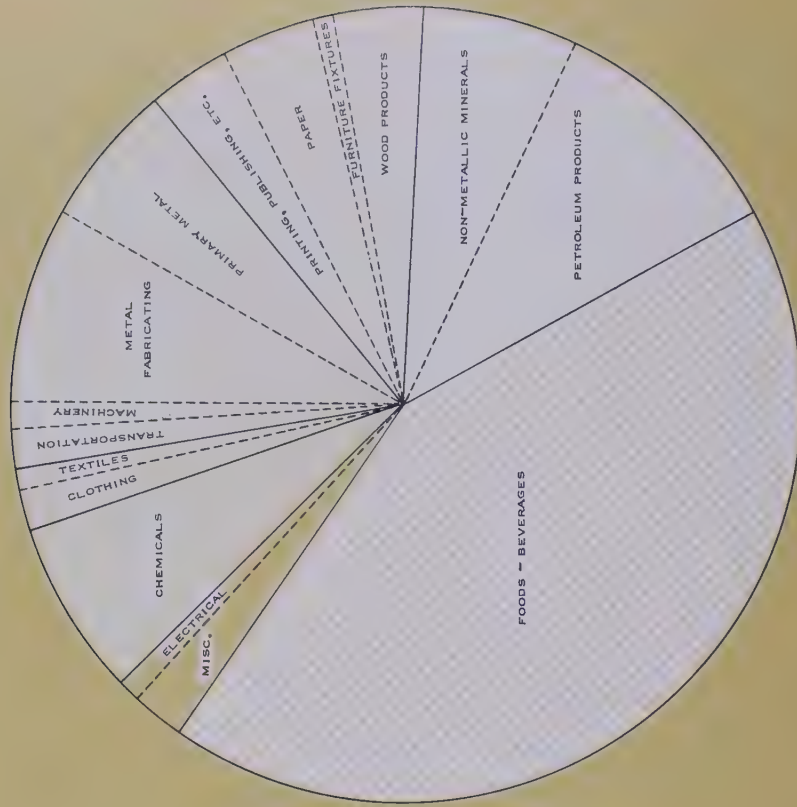
*Major manufacturing plants have located throughout the province of Alberta.*



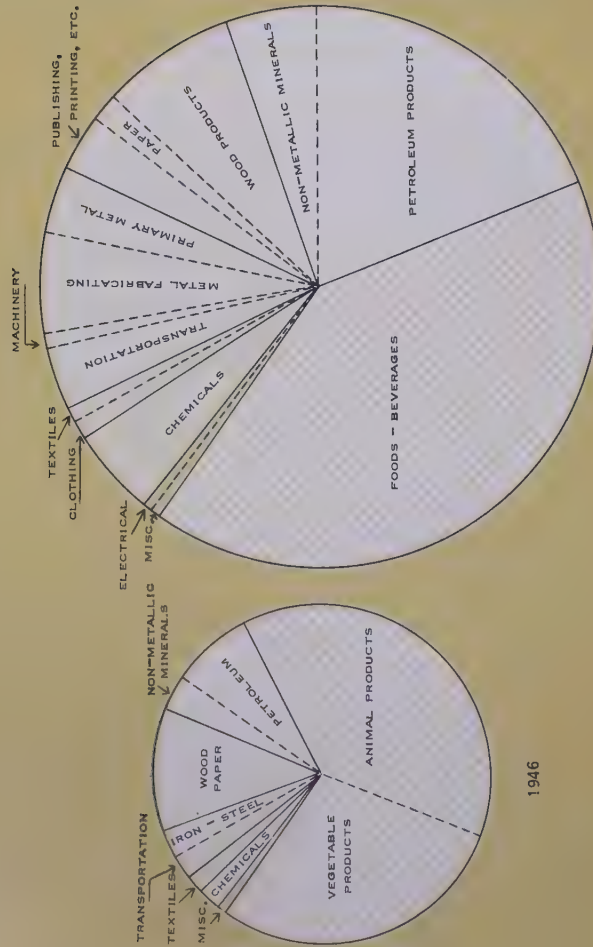
*Alberta farmers produce approximately 350,000,000 bushels of wheat, oats, barley and rye each year.*

GROSS VALUE OF PRODUCTION  
MANUFACTURING INDUSTRIES - ALBERTA

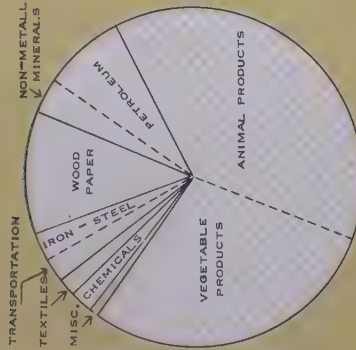
1946 - \$ 257,031,867  
1956 - \$ 703,188,739  
1966 - \$ 1,363,500,000



1966



1956



1946

GROSS VALUE OF PRODUCTION, MANUFACTURING INDUSTRIES,  
PERCENTAGE COMPARISON BY INDUSTRY AND PROPORTIONAL COMPARISON OF GROWTH  
ALBERTA, 1946, 1956 AND 1966



# MANUFACTURING

Alberta's central location gives it a major advantage as the area in western Canada in which to manufacture. The region to be serviced stretches from the Lakehead on the east to the Pacific Ocean on the west; and, in view of the increasing tempo of development in the Canadian northland, to this can be added the McKenzie Valley and the Arctic reaches. Except in special cases, there can be no doubt that the placing of plants in the heart of this vast area gives them distinct transportation advantages over those placed anywhere on the periphery.

The distance of the province from, and consequent cost of shipping to, tidewater presents a problem to firms hoping to serve world markets. Calgary and Edmonton, the major industrial centres, are some 800 miles from the ports of Vancouver and Prince Rupert. Manufacturers producing for local western markets are protected by the Canadian freight rate structure, but the freight tariffs are of little help in encouraging manufacturing for export.

Proximity to the mineral-rich Canadian Shield ensures ready access to an abundance of certain types of metallic minerals. Liquid hydrocarbons, coal and sulphur-basic materials for chemical industries - are within the province in practically unlimited amounts.

The 63,000 square miles of merchantable forests in Alberta currently contain over 49 billion cubic feet of wood.

Alberta is fortunate in having been endowed with one of the world's greatest concentrations of the fossil fuels - petroleum, natural gases, and coal. Production from oil-bearing sands has begun at Fort McMurray, thus increasing the province's oil-producing capacity. Other forms of energy are derived from the cheap generation of electricity from strip-mined coal fields, and from hydro-electric stations.

The economic climate of the province has been stimulating and expansive for the past two decades, due mainly to the impetus received from the petroleum industry. Other areas attempting to change from an agriculturally to an industrially based economy have often had to depend on a major primary manufacturing industry, coupled with low labour costs, to sustain growth during the take-off period. This transitional role is played by the petroleum industry in Alberta; and consequently, because of the nature of the industry and its ancillary industrial and manpower requirements, the province has been free from many social problems and hardships associated with massive industrialization. No single manufacturing industry has yet reached such size that a labour dispute has had a significant effect on the economy of a community or the province. As a result of the excellent state of provincial government finances, taxation policies and practices are reasonable and rates are likely to remain fairly stable. Provincial government policy is that all areas are treated alike for industrial taxation purposes and that no areas should be granted special industrial stimuli whether by grants, tax rebates or lower tax rates. The federal government, however, does make such concessions for certain designated areas.

Distance makes mass markets such as the St. Lawrence Valley and the north-eastern United States difficult to reach with final consumer goods. A new mass market is developing in the western U.S.A., mainly California. Alberta, as a ready source of raw materials and as an area in which to manufacture to serve this market, should be considered by firms mindful of long-term prospects.

The western Canadian market in the late 1960's comprises 5.5 million persons, and Alberta has the distinct advantage of being central in this market. In Manitoba and Saskatchewan are 2.0 million persons, in Alberta over 1.5 million, and in British Columbia 2.0 million.

The high level of personal income ensures a relatively affluent local market. Using per capita personal disposable income as the criterion, the purchasing power of 20 million Canadians represents a market of 40 million persons by European standards; or a market of over 60 million by Latin American, Asian or African standards. By the same criterion, western Canada represents a market of the equivalent of from 10 million Europeans to 15 million persons in other parts of the world.

Canadian manufacturing was first established on a major scale in the St. Lawrence Valley. Consumer-oriented industry naturally gravitates to this area, because of external economies that established industrial complexes offer. The broad manufacturing base which has developed in the St. Lawrence Valley has also enabled other more complex industries to start and to produce a greater range of consumer goods.

Despite the historic head-start of the central Canadian provinces, Alberta and other western provinces have broadened and diversified their manufacturing bases. In 1946, the main industries — producing and processing foods and beverages in the prairie provinces and timber products in British Columbia — provided 55 per cent of total manufacturing shipments of the four western provinces. By 1963, this proportion had dropped to 40 per cent, or by an average of almost 1 per cent per year. This change indicates the upsurge of diverse manufacturing industries. The upsurge is a measure of the inherent advantages of cheap natural resources.

The growth of Alberta's manufacturing industry has been aided by the benefits that accrue to an area which has had a late start in industrialization. There are no interests vested in old methods, old machinery and rooted labour pools — interests which have often retarded modernization and efficiency in the older industrial areas. The equipment and techniques being used are the most modern, and Alberta firms can successfully compete with other producers, both national and foreign.

Because the net income from agriculture in western Canada exceeded net income from all other sources for the two decades after World War I, the area was quite properly regarded as being primarily agricultural. Most processed and manufactured products reaching eastern Canadian and world markets were based on agriculture. What little other manufacturing existed was limited to the immediate needs of the relatively small urban communities: small oil refineries, newspapers, cement, a small amount of clothing manufacture, bakeries, tinsmiths. Manufactured goods from eastern North America, Europe and Japan were imported in exchange for farm products. While this exchange was perfectly normal and natural from a historic perspective, it induced feelings of hostility and frustration, since the great fluctuations in prices and volumes of western Canadian output were not paralleled in the volume and prices of imported manufactured goods.

Since World War II, there has been a radical and dramatic change in the situation. Although the volume of agricultural products remains somewhat subject to the vagaries of the weather, prices have been more stable. The development of North American and world markets for paper and wood, nickel and nickel alloys, fabricated materials, chemicals and vegetable oils, textiles and clothing has resulted in an in-

creasing volume of semi-manufactured or semi-processed materials being exported from the western provinces. Final consumer products, which were formerly imported, such as iron and steel materials and machinery, furniture, and chemicals, are now being manufactured locally.

In the case of all goods produced locally for local markets, the distance from the major industrial centres of North America is an advantage to western fabricators because of high transportation costs. As more semi-processed materials become available, the industrial base in western Canada is broadening rapidly. Because of its solid resource and energy base, western Canada exceeds most areas in current rate of development and in favourable prospects for future development.

These remarks although referring deliberately to western Canada, apply specifically to Alberta in even greater degree. Alberta's manufacturing has been expanding rapidly during the post-war period. From 1946 to 1966 the net value of manufacturing production has increased by 628 per cent to \$492 million; the gross value increased over 500 per cent to \$1,364 million. In 1946, processed food and beverages constituted 67 per cent of the value of all Alberta manufacturers' shipments; in 1966, this proportion had dropped to 42 per cent, although the value of production of foods and beverages had more than trebled.

Investment in Alberta manufacturing plants between 1948 and 1967 totalled \$1,500 million. From 1948 to 1962, the investment averaged \$71 million annually; over the past five years the average has increased to \$87 million annually.

The range of products has become more diversified; many manufacturing firms have been established or have expanded. Included in the list of new plants are a pulp-mill, plywood plants, several clothing plants, a dehydrated vegetable plant, an oil seed processing plant, several meat processing plants, steel mills and a nickel refinery, several pipe and tube mills, a range of oil industry equipment plants, automobile tire

Table 4 ANNUAL INVESTMENT IN MANUFACTURING, ALBERTA, 1948-1967  
(millions of dollars)

	Food and Beverages	Iron and Steel Products	Wood	Transportation Equipment	Metal Fabricating	Non- Metallic Mineral Products	Petroleum Products	Other	Total
1948	*	*	*	*	*	*	*	*	23.4
1949	7.2	*	*	0.7	*	*	4.4	8.3	20.6
1950	7.5	*	*	0.7	*	*	6.7	9.5	24.4
1951	8.4	*	*	0.7	*	*	14.4	21.6	45.1
1952	6.5	*	*	1.1	*	*	10.6	68.2	86.4
1953	9.1	3.0	*	1.4	*	4.7	6.0	79.9	104.1
1954	9.6	1.9	*	1.2	*	4.5	21.9	24.9	64.0
1955	8.0	3.3	*	0.9	*	12.9	24.4	28.5	78.0
1956	10.3	10.9	*	1.4	*	16.1	23.6	68.6	130.9
1957	8.5	6.8	*	1.6	*	5.3	19.9	40.6	82.7
1958	9.3	3.6	*	1.7	*	5.3	45.6	25.0	90.5
1959	10.6	8.9	*	1.1	*	11.6	35.8	32.1	100.1
1960	11.7	*	2.9	*	2.6	12.4	8.7	46.0	84.3
1961	12.2	*	2.5	*	1.7	7.2	3.9	29.4	56.9
1962	14.7	*	3.1	*	2.2	7.2	6.1	39.4	72.7
1963	13.5	*	3.9	*	1.9	9.7	4.4	31.4	64.8
1964	14.0	*	4.0	*	2.5	6.8	5.1	50.8	83.2
1965	15.0	*	4.3	*	3.1	10.2	3.8	69.2	105.6
1966	14.8	*	2.8	*	2.9	10.1	4.7	59.3	94.6
1967	20.3	*	2.5	*	2.9	8.7	6.4	46.0	86.8

\* Figures included in other manufacturing.



plants, mobile home plants, plants producing various construction materials, a range of chemical plants and oil refineries along with many gas processing and sulphur extraction plants.

With the broadening of the industrial base, the fabrication and assembly of more component parts and semi-processed materials become possible. Industrial opportunities become increasingly abundant and more economically feasible. The current range of industrial products both attracts new industries and makes them possible. An indication of the size of local market for manufactured products presently brought into Alberta may be inferred from the accompanying table.

Alberta manufacturers have begun to export manufactured products to other countries and other regions of Canada. Clothing, telephones and equipment, oil field production equipment, rubber tires, agricultural machinery, wood pulp, ceramic products and prefabricated buildings, chemicals and textiles, are typical of the diverse range

The two major cities, Calgary and Edmonton, account for over \$1 billion, almost 75 per cent, of the Alberta volume of manufacturing. Forty million dollars of volume originates in Medicine Hat, \$25 million in Red Deer and over \$80 million in Lethbridge. Other manufacturing centres account for \$196 million of volume — less than 15 per cent of the total.

By western Canadian standards large plants have become more numerous. From 1952 to 1965, the number of Alberta plants, each with annual gross value of shipments of over \$10 million, increased from 8 to 26; the number with annual gross value of shipments of from \$1 million to \$10 million increased from 74 to 152. In 1952, one plant had over 1,000 employees; in 1965, there were two; plants employing over 500 have increased from 5 to 14; plants employing between 200 and 500 have increased from 12 to 21. In the same period, employment in manufacturing increased from 31,500 to 45,000 persons. Since the value of manufacturing shipments has more than doubled in the period, these employment figures indicate that manufacturing firms in Alberta are becoming more capital intensive.

Because manufacturing activity in western Canada is still in a comparatively early stage in relation to the industrial centres of North America, sources of industrial components and raw materials are not yet fixed. Broadening of the industrial base depends greatly on inter-firm communication.

Table 5 SELECTED ITEMS OF REVENUE FREIGHT CARRIED BY RAILWAYS IN ALBERTA, 1965

Commodities	Originating at Billing Stations tons	Terminating at Receiving Stations tons	Apparent Imports tons
Soybean oil cake and meal	40	10,346	10,306
Margarine, n. o. s.	776	1,946	1,170
Cheese	34	351	317
Sand, industrial	7,575	49,921	42,346
Phosphate rock	-	320,934	320,934
Gypsum, crude	82	101,843	101,761
Rubber, crude, natural, and synthetic	50	8,185	8,135
Sodium (soda) products	28,085	73,143	45,058
Tar, pitch and creosote	1,469	4,531	3,062
Iron and steel (bar, rod and slab)	1,047	135,501	134,454
Iron and Steel nails, and wire (woven and not woven) n. o. s.	188	15,530	15,342
Manufactured iron and steel	50,550	182,305	131,755
Iron and steel pipe and fittings, n. o. s.	78,057	140,302	62,245
Agricultural implements, n. o. s.	2,237	37,563	35,326
Machinery parts	2,013	4,058	7,045
Refractories	223	7,400	7,177
Newsprint paper	809	32,554	31,745
Paperboard, fibreboard, and pulpboard	111	30,066	29,955
Furnaces, heaters, radiators, and parts	335	4,489	4,044
Bathroom and lavatory fixtures, and sinks	17	1,458	1,441
Glass	453	7,110	6,657
Rope, cordage, and binder twine, n. o. s.	315	5,609	5,294
Syrup and molasses, refined	95	1,208	1,113
Candy and confectionery	356	6,735	6,379
Food products, n. o. s. in cans and packages, not frozen	19,534	128,435	108,901
Soap and cleaning and washing compounds	1,563	20,488	18,925
Containers, metal	3,317	13,546	10,229

Local manufacturers are becoming ever more capable of supplying conveniently a substantial proportion of in-process parts and goods, which in the pre-1950 era had to be brought in from other parts of North America. Such local interchanges create additional manufacturing opportunities, and further economic development.

Interfirm communication has been promoted and advocated by governments and trade organizations. Active support is being given to programs designed to lessen dependence on imports, both interprovincial and foreign. These programs mainly take the form of acquainting local manufacturers with the materials needed by, and the products of, other local manufacturers. Attention is focussed on those items of foreign imports entering Canada in such volume that they offer prime opportunities to home industrialists. Assistance in translating the initial studies into industrial action is offered by the industrial development co-ordinators of municipal and provincial governments.

The sequence of developing and proving markets by large scale imports from other areas, then of assembling components as a stage of local manufacturing, and finally of completely fabricating locally, is well established in western Canada. An indication that the first stage of the sequence is well developed is the multibillion dollar volume of retail trade in the four western provinces.



*This pulp and paper mill near Hinton represents an investment of \$60,000,000.*

Table 6

## VALUE OF MANUFACTURERS' FACTORY SHIPMENTS, BY INDUSTRIAL GROUPS

ALBERTA 1950-1966

	1950	1952	1954	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	(millions of dollars)				(millions of dollars)									
Food and Beverages .....	219.7	259.3	263.6	287.7	307.0	339.5	363.6	351.0	394.4	435.2	454.6	501.2	515.9	575.0
Textiles .....	2.3	2.8	4.5	6.0	6.4	8.9	7.7	7.5	7.8	8.5	9.4	9.1	10.4	9.7
Clothing .....	7.2	7.6	7.0	8.4	9.3	10.7	11.2	11.7	12.8	15.8	17.6	20.7	22.9	23.2
Wood Products .....	42.7	57.6	54.3	54.7	41.1	40.2	44.9	39.4	39.6	43.1	52.9	56.6	51.8	49.0
Paper Products .....	2.3	6.4	7.7	12.3	7.6	8.8	9.3	9.2	9.1	10.3	10.5	11.5	12.2	12.3
Printing, Publishing and Allied Industries .....	11.4	16.0	18.3	23.0	17.4	29.0	35.3	41.1	41.3	41.4	46.0	45.0	52.4	53.0
Iron and Steel Products .....	16.8	27.0	34.2	55.2	24.8	26.6	28.8	30.1	31.5	33.4	33.2	36.6	39.5	44.5
					35.7	37.2	39.2	50.3	67.8	45.5	51.0	82.0	87.7	78.9
					Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries) .....									
					49.8	46.0	52.6	52.6	56.1	69.6	72.3	80.8	102.7	110.0
					Machinery Industries (Except Electrical Machinery) .....									
					2.8	3.8	2.7	5.0	6.7	10.3	14.9	15.3	15.8	16.8
Transportation Equipment .....	12.1	21.7	19.9	24.3	28.4	26.0	28.1	26.2	14.0	14.7	16.2	16.6	20.5	23.2
Non-Ferrous Metal Products (1) ...	1.0	1.3	3.6	17.9										
Electrical Apparatus and Supplies ...	.6	.5	1.0	3.8	3.8	4.5	5.0	5.9	7.0	7.9	8.6	9.9	11.4	12.4
Non-Metallic Mineral Products .....	16.9	23.4	30.1	37.7	41.0	47.0	51.5	55.7	60.5	71.9	65.9	70.9	78.6	87.7
Products of Petroleum and Coal (2) ..	60.0	81.0	102.0	132.8	103.8	106.5	108.6	108.4	108.6	114.2	125.3	125.4	136.3	139.0
Chemical and Allied Products .....	8.3	11.0	26.0	35.3										
					41.0	47.1	55.3	57.9	61.3	73.0	81.0	84.8	91.8	99.8
Miscellaneous Manufacturing .....	1.7	2.8	2.5	4.0	4.6	6.2	6.5	8.0	17.0	22.4	24.9	27.4	29.3	29.0
TOTAL .....	403.0	518.4	575.2	703.1	724.5	788.0	850.3	860.0	935.5	1,017.2	1,084.3	1,193.8	1,278.2	1,363.5

(1) Included in "Primary Metal Industries", 1957-1963.

(2) Includes: "Leather Products", "Rubber Products".



Table 7

## PRELIMINARY PRINCIPAL STATISTICS OF THE MANUFACTURING INDUSTRIES, BY CENSUS DIVISIONS

ALBERTA - 1965

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
DIVISION NO. 1									
Medicine Hat	39	1,146	131	1,277	5,819,823	820,021	24,762,343	14,393,615	39,975,979
Other	5	457	247	704	3,103,636	215,012	3,019,845	6,253,269	9,488,126
GRAND TOTAL	44	1,603	378	1,981	8,923,459	1,035,033	27,782,188	20,646,884	49,464,105
DIVISION NO. 2									
Lethbridge	83	1,603	361	1,964	7,840,525	629,603	54,944,522	25,864,119	81,438,244
Brooks	6	26	9	35	103,000	9,673	469,007	289,481	768,161
Other	29	550	82	632	2,441,149	490,669	13,292,842	6,333,807	20,117,318
GRAND TOTAL	118	2,179	452	2,631	10,384,674	1,129,945	68,706,371	32,487,407	102,323,723
DIVISION NO. 3									
Cardston	7	14	5	19	49,071	5,594	212,415	89,271	307,280
Nanton	3	6	3	9	23,470	1,915	59,761	40,597	102,273
Pincher Creek	4	11	6	17	60,154	6,051	184,091	81,970	272,112
Other	19	545	120	665	2,083,389	144,522	6,642,317	4,011,007	10,787,846
GRAND TOTAL	33	576	134	710	2,216,084	158,082	7,098,584	4,222,845	11,479,511
DIVISION NO. 4									
Hanna	6	23	10	33	111,665	9,420	287,748	135,725	432,893
Other	3	4	3	7	17,876	716	28,000	27,329	56,045
GRAND TOTAL	9	27	13	40	129,541	10,136	315,748	163,054	488,938
DIVISION NO. 5									
Drumheller	6	30	3	33	146,048	5,139	93,369	250,251	348,759
Linden	6	47	3	50	189,759	13,353	369,294	240,539	623,186
Vulcan	4	11	3	14	53,165	4,180	168,400	110,941	283,521
Other	12	93	7	100	315,810	17,718	1,037,908	619,213	1,674,839
GRAND TOTAL	28	181	16	197	704,782	40,390	1,668,971	1,220,944	2,930,305
DIVISION NO. 6									
Calgary	446	10,932	1,990	12,922	62,041,443	4,596,336	235,411,971	136,754,591	376,762,898
High River	5	25	7	32	121,898	7,458	196,172	131,043	334,673
Okotoks	4	10	6	16	60,255	8,188	149,366	123,326	280,880
Olds	4	16	5	21	79,953	11,326	324,678	169,565	505,569
Sundre	4	9	5	14	33,576	3,450	161,323	76,907	241,680
Other	19	109	8	117	513,244	61,283	1,773,495	1,132,867	2,987,645
GRAND TOTAL	482	11,101	2,021	13,122	62,850,369	4,688,041	238,017,005	138,388,299	381,093,345
DIVISION NO. 7									
Provost	3	8	4	12	47,644	5,339	82,962	77,272	165,573
Stettler	11	41	24	65	203,496	14,077	405,013	325,686	744,776
Wainwright	4	17	5	22	74,104	6,157	179,186	119,594	304,937
Other	13	47	17	64	198,185	21,500	1,253,589	489,182	1,764,271
GRAND TOTAL	31	113	50	163	523,429	47,073	1,920,750	1,011,734	2,979,567
DIVISION NO. 8									
Red Deer	35	497	99	596	2,474,776	189,062	18,341,195	6,425,325	24,955,582
Bluffton	3	5	5	10	30,737	7,769	212,693	42,507	262,969
Lacombe	8	48	16	64	212,328	23,917	707,423	383,124	1,114,464
Ponoka	13	45	20	65	179,579	18,677	722,306	368,578	1,109,561
Rocky Mountain House	4	14	8	22	54,673	7,199	284,286	108,432	399,917
Other	29	147	25	172	717,390	137,308	6,444,320	2,010,758	8,592,386
GRAND TOTAL	92	756	173	929	3,669,483	383,932	26,712,223	9,338,724	36,434,879
DIVISION NO. 9									
GRAND TOTAL	55	570	30	600	2,417,287	1,064,562	2,238,952	6,290,548	9,594,062
DIVISION NO. 10									
Camrose	18	263	29	292	1,355,905	201,041	13,513,534	2,538,508	16,253,083
Lloydminster	11	212	16	228	988,144	347,370	4,847,703	2,075,305	7,270,378
Vermilion	5	26	9	35	122,885	9,589	324,052	221,491	555,132
Other	29	223	32	255	1,074,937	474,989	3,246,046	2,018,928	5,739,963
GRAND TOTAL	61	724	86	810	3,541,871	1,032,989	21,931,335	6,854,232	29,618,556
DIVISION NO. 11									
Edmonton	515	14,839	4,226	19,065	90,903,493	8,423,305	324,636,586	204,747,385	537,807,276
Stony Plain	3	7	5	12	38,650	3,070	124,410	92,163	219,643
Other	36	1,170	89	1,259	7,165,013	1,348,774	30,910,918	19,274,914	51,534,606
GRAND TOTAL	554	16,016	4,320	20,336	98,107,156	9,775,149	355,671,914	224,114,462	589,561,525
DIVISION NO. 12									
St. Paul	7	40	9	49	143,009	11,766	448,895	335,229	795,890
Other	23	100	27	127	314,582	63,883	1,137,597	702,983	1,904,463
GRAND TOTAL	30	140	36	176	457,591	75,649	1,586,492	1,038,212	2,700,353
DIVISION NO. 13									
Athabasca	5	11	9	20	45,692	5,434	227,721	91,434	324,589
Barrhead	8	32	5	37	151,516	25,631	1,052,816	471,496	1,549,943
Westlock	5	29	5	34	109,318	8,703	514,423	230,366	753,492
Other	25	53	7	60	197,229	49,183	955,967	317,792	1,322,942
GRAND TOTAL	41	125	26	151	503,755	88,951	2,750,927	1,111,088	3,950,966
DIVISION NO. 14									
GRAND TOTAL	49	837	46	883	4,344,000	1,438,000	17,205,000	14,478,000	33,011,000
DIVISION NO. 15									
Grande Prairie	15	355	86	441	1,857,379	167,077	2,921,103	3,604,212	6,692,392
Fairview	4	11	17	28	54,219	6,112	61,734	98,750	166,596
Grimshaw	4	13	2	15	39,508	11,818	109,760	83,110	204,688
Peace River	6	37	9	46	165,660	12,395	386,771	339,741	738,907
Other	161	1,204	31	1,235	3,612,816	780,838	4,038,985	8,612,279	13,432,102
GRAND TOTAL	190	1,620	145	1,765	5,729,582	978,240	7,518,353	12,738,092	21,234,685

Table 8

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
ALBERTA - 1965

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>a</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
<b>FOOD AND BEVERAGE INDUSTRIES:</b>	466	10,630	2,809	13,439	58,806,685	4,645,081	378,516,167	132,703,519	515,864,767
Meat Products Industries:									
Slaughtering and meat packing plants	26	3,805	768	4,573	23,882,687	948,691	231,505,684	47,885,294	280,339,669
Poultry processors	9	255	384	639	1,754,750	149,590	9,702,256	3,205,534	13,057,380
Dairy Products Industries:									
Butter and cheese plants	75	427	131	558	1,763,256	300,994	16,606,739	3,847,898	20,755,631
Pasteurizing plants	30	1,741	285	2,026	8,487,443	717,688	24,613,344	15,626,117	40,957,149
Condenseries	3)								
Ice cream manufacturers	1)	97	16	113	421,148	72,237	6,006,348	2,153,259	8,231,844
Process cheese manufacturers	1)								
Fruit and Vegetable Canners and Preservers:									
Fruit and vegetable canners and preservers	4	249	143	392	1,040,894	97,616	3,897,013	2,276,014	6,270,643
Grain Mills:									
Feed manufacturers	57	433	30	463	1,992,885	256,572	17,790,277	4,868,270	22,915,119
Flour mills	7	566	90	656	2,685,698	245,078	25,231,695	5,520,791	30,997,564
Bakery Products Industries:									
Bakeries	189	1,327	708	2,035	7,403,576	576,325	10,289,146	14,573,573	25,439,044
Beverage Manufacturers:									
Soft drink manufacturers	23	565	68	633	2,770,109	281,688	3,560,627	6,959,235	10,801,550
Breweries	7	535	32	567	3,182,232	287,343	5,865,294	13,203,946	19,356,583
Other Food Processors:									
Animal oils and fats plants	2)								
Biscuit manufacturers	2)								
Breakfast cereal manufacturers	2)								
Confectionery manufacturers	5)								
Distilleries	1)								
Fish products industry	1)								
Macaroni manufacturers	2)	630	154	784	3,422,007	711,259	23,447,744	12,583,688	36,742,591
Sausage and sausage casing manufacturers	4)								
Sugar refineries	3)								
Vegetable oil mills	2)								
Wineries	1)								
Miscellaneous food manufacturers, n.e.s.	9)								
<b>RUBBER INDUSTRIES: (1)</b>	-	-	-	-	-	-	-	-	-
<b>LEATHER INDUSTRIES: (2)</b>	-	-	-	-	-	-	-	-	-
<b>TEXTILE INDUSTRIES:</b>	21	308	216	524	2,413,337	149,583	6,355,848	3,872,025	10,377,456
Synthetic Textile Mills	1)								
Cordage and Twine Industry	1)								
Canvas Products	7)								
Cotton and Jute Bag Industry	2)	308	216	524	2,413,337	149,583	6,355,848	3,872,025	10,377,456
Automobile Fabric Accessory Manufacturers	1)								
Embroidery, Pleating, Hemstitching Manufacturers	4)								
Miscellaneous Textile Industries, n.e.s.	5)								
<b>KNITTING MILLS: (3)</b>	-	-	-	-	-	-	-	-	-
<b>CLOTHING INDUSTRIES:</b>	20	378	1,744	2,122	6,521,910	57,648	12,159,864	10,716,847	22,934,359
Men's Clothing Factories	11)								
Women's Clothing Factories	6)								
Fur Goods Industry	2)	378	1,744	2,122	6,521,910	57,648	12,159,864	10,716,847	22,934,359
Hat and Cap Industry	1)								
<b>WOOD INDUSTRIES:</b>	329	3,616	238	3,854	13,873,467	1,712,349	22,808,538	27,232,894	51,753,781
Sawmills	242	1,860	27	1,887	5,488,060	1,210,800	5,670,579	13,298,621	20,180,000
Veneer and Plywood Mills	4	488	121	609	2,402,745	234,944	4,508,746	4,150,404	8,694,094
Sash and Door and Planing Mills	63	977	55	1,032	4,684,614	154,903	8,467,120	6,606,669	15,228,692
Coffin and Casket Industry	7	34	16	50	182,333	9,870	489,910	345,114	844,894
Miscellaneous Wood Products, n.e.s. (including wooden box factories, wood preservation)	13	257	9	266	1,114,815	101,832	3,672,183	2,832,086	6,606,101
<b>FURNITURE AND FIXTURE INDUSTRIES:</b>	98	848	172	1,020	4,062,337	106,829	5,807,450	6,271,177	12,185,456
Household Furniture Industry	81	453	98	551	1,852,568	50,762	2,503,584	2,804,676	5,359,022
Other Furniture Industries	16)								
Electric Lamp and Shade Industries	1)	395	74	469	2,209,769	56,067	3,303,866	3,466,501	6,826,434
<b>PAPER AND ALLIED INDUSTRIES:</b>	22	1,689	201	1,890	9,965,768	1,614,836	24,598,853	26,194,574	52,408,263
Asphalt Roofing Manufacturers	3	137	11	148	822,828	70,013	2,933,835	2,292,872	5,296,724
Other Paper Converters	8	161	53	214	896,234	31,195	1,169,120	2,199,630	3,309,945
Pulp and Paper Mills	3)								
Folding Box and Set-Up Box Manufacturers	1)								
Corrugated Box Manufacturers	3)	1,391	137	1,528	8,246,706	1,513,628	20,495,898	21,702,072	43,711,598
Paper Bag Manufacturers	4)								
<b>PRINTING, PUBLISHING AND ALLIED INDUSTRIES:</b>	204	2,292	837	3,129	14,644,232	305,072	10,558,997	28,681,560	39,545,629
Commercial Printing (4)	92	832	274	1,106	5,110,614	102,898	3,984,548	8,077,560	12,165,026
Plate Making (including Engraving), Typesetting and Bookbinding for the Trade (5)	19	145	42	187	857,852	17,878	550,012	1,165,696	1,742,586
Publishing Only	15	35	30	65	224,124	-	296,176	424,555	720,731
Printing and Publishing	78	1,280	491	1,771	8,451,642	184,296	5,719,261	10,013,729	24,917,286
<b>PRIMARY METAL INDUSTRIES:</b>	21	2,158	99	2,257	13,574,397	1,900,655	57,403,704	28,283,781	87,687,140
Steel Pipe and Tube Mills	4)								
Smelting and Refining	1)	1,192	56	1,248	7,848,662	1,212,884	46,322,284	17,788,030	65,323,207

## PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - ALBERTA - 1965 (Continued)

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>a</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
<b>PRIMARY METAL INDUSTRIES: (Continued)</b>									
Iron and Steel Mills	3)								
Iron Foundries	6)								
Aluminum Rolling, Casting and Extruding	3)	966	43	1,009	5,725,735	696,771	11,171,420	10,495,742	22,363,933
Copper and Alloy Rolling, Casting and Extruding	1)								
Metal Rolling, Casting and Extruding	3)								
<b>METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)</b>									
Boiler and Plate Works	192	5,302	365	5,667	27,166,652	749,173	53,046,703	48,018,510	102,714,485
Fabricated Structural Metal Industry	6	323	15	338	1,580,564	60,030	2,281,880	1,721,550	4,072,478
Ornamental and Architectural Metal Industry	12	1,336	63	1,399	7,343,887	150,649	17,753,692	16,256,401	34,150,832
Metal Stamping, Pressing and Coating Industry	36	1,371	157	1,528	6,803,276	154,471	14,105,551	9,212,053	23,562,075
Wire and Wire Products Manufacturers	29	493	46	539	2,729,120	86,545	9,464,825	5,073,387	15,524,757
Hardware, Tool and Cutlery Manufacturers	7)	188	10	198	881,438	32,239	1,827,408	1,430,093	3,208,740
Heating Equipment Manufacturers	7)								
Machine Shops	6	89	4	93	362,970	5,763	634,471	779,890	1,420,124
Miscellaneous Metal Fabricating Industries, n.e.s.	76	1,275	62	1,337	6,448,588	221,841	6,496,298	10,848,055	17,567,094
	13	227	8	235	1,016,809	28,626	1,292,650	1,787,100	3,108,385
<b>MACHINERY INDUSTRIES: (Except Electrical Machinery)</b>									
Agricultural Implement Industry	33	817	43	860	3,897,819	177,512	7,713,436	7,006,325	15,797,273
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	13	435	17	452	1,819,855	83,092	2,961,239	3,170,684	6,215,015
Commercial Refrigeration and Air Conditioning Equipment Manufacturers	19)								
	1)	382	26	408	2,077,964	93,520	4,752,197	4,735,641	9,581,358
<b>TRANSPORTATION EQUIPMENT INDUSTRIES:</b>									
Truck Body and Trailer Manufacturers	48	1,444	118	1,562	6,542,880	173,502	9,605,721	10,762,524	20,541,747
Motor Vehicle Parts and Accessories Manufacturers	32	597	44	641	1,986,558	56,351	5,492,782	4,239,938	9,789,071
Aircraft and Parts Manufacturers	5	192	18	210	946,116	20,940	801,102	1,325,454	2,156,496
Boat Building and Repairs	6)								
Miscellaneous Vehicle Manufacturers, n.e.s.	2)	655	56	711	3,610,206	87,211	3,311,837	5,197,132	8,596,180
	3)								
<b>ELECTRICAL PRODUCTS INDUSTRIES:</b>									
Communications Equipment Manufacturers	12	218	156	374	1,383,656	76,039	6,662,428	4,650,708	11,389,175
Manufacturers of Electrical Industrial Equipment	6)								
Battery Manufacturers	3)								
Manufacturers of Miscellaneous Electrical Products	2)	218	156	374	1,383,656	76,039	6,662,428	4,650,708	11,389,175
	1)								
<b>NON-METALLIC MINERAL PRODUCTS INDUSTRIES:</b>									
Concrete Products Manufacturers	109	2,916	372	3,288	15,873,460	3,068,696	20,308,092	46,218,892	78,595,680
Ready-Mix Concrete Manufacturers	38	805	21	826	3,844,902	234,169	7,615,590	8,383,010	16,232,778
Clay Products (Domestic Clays)	35	480	12	492	2,271,859	445,936	10,065,203	6,300,015	17,712,054
Clay Products (Imported Clays)	7)	327	21	348	1,518,530	171,655	886,463	2,226,281	3,284,399
Lime Manufacturers	2)								
Gypsum Products Manufacturers	2)	236	5	241	1,159,214	268,127	1,972,357	4,240,208	6,480,692
Cement Manufacturers	4)								
Stone Products Manufacturers	2)								
Mineral Wool Manufacturers	1)	1,003	311	1,314	6,795,118	1,843,187	7,161,199	24,271,607	33,275,993
Glass Manufacturers	3)								
Glass Products Manufacturers	6)								
Miscellaneous Non-Metallic Mineral Products, n.e.s.	7	65	2	67	283,837	105,622	707,280	796,862	1,609,764
<b>PETROLEUM AND COAL PRODUCTS INDUSTRIES:</b>									
Petroleum Refineries	13	993	45	1,038	7,170,166	2,056,142	103,318,352	30,910,465	136,284,950
Manufacturers of Lubricating Oils and Greases	7	960	43	1,003	7,031,049	2,032,022	102,817,997	30,494,948	135,344,967
Other Petroleum and Coal Products Industries	2)	33	2	35	139,117	24,120	500,355	415,517	939,992
	4)								
<b>CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:</b>									
Manufacturers of Soaps and Cleaning Compounds	38	2,137	181	2,318	14,131,776	4,822,784	35,778,024	51,189,726	91,790,534
Manufacturers of Industrial Chemicals	5	37	14	51	243,121	17,538	728,107	954,224	1,699,869
Explosives and Ammunition Manufacturers	13	1,401	108	1,509	9,258,548	3,005,177	21,491,480	33,214,358	58,611,015
Manufacturers of Plastics and Synthetic Resins	1)								
Manufacturers of Pharmaceuticals and Medicines	4)								
Paint and Varnish Manufacturers	1)	699	59	758	4,630,107	900,060	13,558,437	17,021,144	31,470,650
Manufacturers of Printing Inks	4)								
Other Chemical Industries	2)								
	8)								
<b>MISCELLANEOUS MANUFACTURING INDUSTRIES:</b>									
Orthopaedic and Surgical Appliance Manufacturers	176	1,331	336	1,667	7,102,188	335,117	14,471,965	14,482,170	29,280,252
Ophthalmic Goods Manufacturers	3	10	2	12	52,892	1,996	45,383	63,261	110,640
Dental Laboratories	8	117	32	149	534,227	7,062	1,033,171	451,866	1,402,009
Jewellery and Silverware Manufacturers	59	161	57	218	945,227	23,131	400,050	1,427,616	1,850,797
Broom, Brush and Mop Industry	6	28	8	36	69,538	4,034	85,242	147,571	236,847
Plastic Fabricators, n.e.s.	4	7	3	10	30,337	1,595	35,545	34,197	71,337
Sporting Goods Industry	18	142	60	202	745,375	46,561	1,554,870	1,494,570	3,096,010
Signs and Displays Industry	4	17	5	22	79,003	3,053	94,500	108,195	205,748
Stamp and Stencil (Rubber and Metal) Manufacturers	37	303	49	352	1,475,936	42,390	943,481	1,783,954	2,760,825
Artificial Ice Manufacturers	6	20	4	24	96,810	1,390	90,284	150,707	251,381
Fountain Pen and Pencil Manufacturers	2)								
Fur Dressing and Dyeing	1)								
Instruments and Related Products Manufacturers	2)								
Model and Pattern Manufacturers	4)								
Statuary, Art Goods, Regalia and Novelties Manufacturers	1)	526	116	642	3,072,843	203,003	10,180,439	8,811,224	19,204,568
Venetian Blind Manufacturers	2)								
Other Miscellaneous Industries	4)								
Rubber Industries	1)								
Leather Industries	5)								
Knitting Mills	6)								
	3)								
<b>GRAND TOTALS - ALBERTA</b>	<b>1,802</b>	<b>37,077</b>	<b>7,932</b>	<b>45,009</b>	<b>207,130,730</b>	<b>21,960,018</b>	<b>779,104,232</b>	<b>478,095,706</b>	<b>1,279,150,956</b>

<sup>a</sup>Value Added<sup>a</sup> does not include change of inventory of "Goods in Process" and "Finished Goods"

(1) Rubber Industries - Rubber tires and tube manufacturers, 2; Other rubber industries, 3 -- included in Miscellaneous Manufacturing Industries

(2) Leather Industries - Leather tanneries, 3; shoe factories, 1; leather glove factories, 1; miscellaneous leather products manufacturers, 1 -- included in Miscellaneous Manufacturing Industries

(3) Knitting Mills - Other knitting mills, 3 -- included in Miscellaneous Manufacturing Industries

(4) Commercial Printing - published in earlier years as two industries; "Printing and Bookbinding" and "Lithographing"

(5) Platemaking (including engraving), Typesetting and Bookbinding for the Trade - published in 1962 and earlier years as two industries; "Engraving and duplicate plates" and "Trade composition or typesetting"



PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
CALGARY - 1965

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>a</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
FOOD AND BEVERAGE INDUSTRIES:	87	3,076	853	3,929	18,381,368	1,331,684	120,066,987	43,026,825	164,425,496
Meat Products Industries:									
Slaughtering and meat packing plants	5	1,130	248	1,378	7,409,282	285,700	71,270,438	14,027,011	85,583,147
Poultry processors	3	83	167	250	673,290	53,532	5,185,484	1,384,625	6,623,641
Dairy Products Industries:									
Butter and cheese plants	1)								
Pasteurizing plants	4)	600	94	694	2,957,245	211,857	9,192,617	4,587,213	13,991,687
Process cheese manufacturers	1)								
Grain Mills:									
Feed manufacturers	7	108	9	117	647,862	46,279	6,300,120	1,784,038	8,130,437
Flour mills	3	207	20	227	1,023,469	141,306	13,348,183	3,647,170	17,136,659
Bakery Products Industries:									
Bakeries	45	429	217	646	2,495,358	186,607	3,589,277	4,867,873	8,643,757
Beverage Manufacturers:									
Soft drink manufacturers	3	123	15	138	688,534	57,860	659,656	1,616,166	2,333,681
Other Food Processors:									
Confectionery manufacturers	4	5	12	17	40,819	3,640	51,890	63,522	119,052
Animal oils and fats plants	1)								
Biscuit manufacturers	1)								
Breweries	2)								
Distilleries	1)	391	71	462	2,445,519	344,903	10,469,325	11,049,207	21,863,435
Sausage and sausage casing manufacturers	1)								
Wineries	1)								
Miscellaneous food manufacturers, n.e.s.	4)								
RUBBER INDUSTRIES: (1)									
LEATHER INDUSTRIES: (2)									
TEXTILE INDUSTRIES:	8	50	44	94	318,868	9,116	1,436,126	572,558	2,017,800
Canvas Products Industry	3)								
Cotton and Jute Bag Industry	2)								
Embroidery, Pleating, Hemstitching Manufacturers	1)	50	44	94	318,868	9,116	1,436,126	572,558	2,017,800
Miscellaneous Textile Industries, n.e.s.	2)								
KNITTING MILLS: (3)									
CLOTHING INDUSTRIES:	7	28	103	131	317,792	6,230	431,288	467,779	905,297
Men's Clothing Factories	3)								
Women's Clothing Factories	2)								
Fur Goods Industry	1)	28	103	131	317,792	6,230	431,288	467,779	905,297
Hat and Cap Industry	1)								
WOOD INDUSTRIES:	24	405	31	436	1,984,501	71,151	4,838,436	3,328,510	8,238,097
Sash and Door and Planing Mills	16	357	18	375	1,751,154	58,079	3,916,239	2,759,839	6,734,157
Coffin and Casket Industry	5)								
Wooden Box Factories	1)	48	13	61	233,347	13,072	922,197	568,671	1,503,940
Wood Preservation	1)								
Miscellaneous Wood Products Industries, n.e.s.	1)								
FURNITURE AND FIXTURE INDUSTRIES:	42	354	71	425	1,446,538	31,802	2,104,957	2,287,961	4,424,720
Household Furniture Industry	33	277	66	343	1,046,187	22,607	1,633,572	1,773,125	3,429,304
Other Furniture Industries	8)								
Electric Lamp and Shade Industry	1)	77	5	82	400,351	9,195	471,385	514,836	995,416
PAPER AND ALLIED INDUSTRIES:	9	311	106	417	2,022,109	99,955	5,884,783	4,738,985	10,723,723
Asphalt Roofing Manufacturers	1)								
Corrugated Box Manufacturers	2)								
Paper Bag Manufacturers	3)	311	106	417	2,022,109	99,955	5,884,783	4,738,985	10,723,723
Miscellaneous Paper Converters	3)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	62	969	323	1,292	6,399,177	141,200	4,569,855	12,307,261	17,018,316
Commercial Printing (4)	44	415	143	558	2,465,488	49,787	1,943,380	4,097,918	6,091,095
Plate Making (including engraving), Typesetting and Bookbinding for the Trade (5)	9)								
Publishing Only	6)	554	180	734	3,933,689	91,403	2,626,475	8,209,343	10,927,221
Printing and Publishing	3)								
PRIMARY METAL INDUSTRIES:	9	338	10	348	1,740,800	136,157	10,138,719	5,929,438	16,204,314
Aluminum Rolling, Casting and Extruding	2)								
Copper and Alloy Rolling, Casting and Extruding	1)								
Iron Foundries	2)								
Iron and Steel Mills	1)	338	10	348	1,740,800	136,157	10,138,719	5,929,438	16,204,314
Metal Rolling, Casting and Extruding	2)								
Steel Pipe and Tube Mills	1)								
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	55	2,516	197	2,713	13,001,568	284,453	24,911,619	21,504,027	46,700,099
Ornamental and Architectural Metal Industry	17	912	122	1,034	4,855,939	103,896	10,181,914	8,485,546	16,771,356
Metal Stamping, Pressing and Coating Industry	7	136	12	148	855,601	18,368	2,257,344	1,455,692	3,731,404
Machine Shops	16	424	18	442	1,860,399	50,978	1,695,558	3,622,697	5,378,233
Fabricated Structural Metal Industry	5	828	39	867	4,569,333	69,187	8,123,118	8,501,453	16,693,758
Boiler and Plate Works	1)								
Hardware, Tool and Cutlery Manufacturers	2)								
Wire and Wire Products Manufacturers	3)	216	6	222	860,296	33,024	2,653,665	1,438,639	4,125,348
Miscellaneous Metal Fabricating Industries, n.e.s.	4)								
MACHINERY INDUSTRIES: (Except Electrical Machinery)	11	330	18	357	1,755,663	67,004	4,169,371	3,830,521	8,066,896
Agricultural Implement Industry	4	136	6	142	590,959	25,844	1,215,880	683,807	1,025,621
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	7	203	12	215	1,164,704	41,160	2,953,491	3,146,624	6,141,275

## PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - CALGARY - 1965 (Continued)

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added*	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
TRANSPORTATION EQUIPMENT INDUSTRIES:	16	295	21	316	1,226,404	41,285	2,108,974	2,618,908	4,769,167
Truck Body and Trailer Manufacturers	8	87	1	88	208,683	7,155	263,935	404,346	675,436
Aircraft and Parts Manufacturers	2)								
Boatbuilding and Repairs	1)								
Motor Vehicle Parts and Accessories Manufacturers	2)	208	20	228	1,017,721	34,130	1,845,039	2,214,562	4,093,731
Miscellaneous Vehicle Manufacturers, n.e.s.	3)								
ELECTRICAL PRODUCTS INDUSTRIES:	8	140	37	177	784,852	69,772	3,747,255	2,243,431	6,060,458
Battery Manufacturers	2)								
Communications Equipment Manufacturers	3)								
Manufacturers of Electrical Industrial Equipment	1)	140	37	177	784,852	69,772	3,747,255	2,243,431	6,060,458
Manufacturers of Miscellaneous Electrical Products	2)								
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	23	596	14	610	3,080,290	332,250	8,181,419	8,683,597	17,197,266
Concrete Products Manufacturers	11	307	5	312	1,547,792	93,583	2,957,952	3,505,463	6,556,998
Ready-Mix Concrete Manufacturers	3)								
Clay Products (Domestic Clays)	1)								
Clay Products (Imported Clays)	1)								
Stone Products Manufacturers	1)	289	9	298	1,532,498	238,667	5,223,467	5,178,134	10,640,268
Glass Products Manufacturers	3)								
Gypsum Products Manufacturers	2)								
Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	1)								
PETROLEUM AND COAL PRODUCTS INDUSTRIES: (6)									
CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	14	634	42	676	4,257,689	1,091,842	6,041,556	10,762,260	17,895,658
Explosives and Ammunition Manufacturers	1)								
Manufacturers of Industrial Chemicals	4)	561	27	588	3,847,623	1,069,449	4,659,532	9,662,472	15,391,453
Paint and Varnish Manufacturers	1)								
Manufacturers of Printing Inks	1)								
Manufacturers of Soaps and Cleaning Compounds	2)	73	15	88	410,066	22,393	1,382,024	1,099,788	2,504,205
Miscellaneous Chemical Industry, n.e.s.	5)								
MISCELLANEOUS MANUFACTURING INDUSTRIES:	71	881	120	1,001	5,323,824	882,435	36,780,626	14,452,530	52,115,591
Dental Laboratories	20	54	12	66	313,426	8,588	115,823	458,729	610,140
Plastic Fabricators, n.e.s.	5	52	3	55	180,354	7,368	293,984	342,559	643,911
Signs and Displays	16	131	15	146	602,887	13,319	405,617	761,717	1,180,653
Artificial Ice Manufacturers	2)								
Broom, Brush and Mop Industry	2)								
Fountain Pen and Pencil Manufacturers	1)								
Fur Dressing and Dyeing Industry	1)								
Instrument and Related Products Manufacturers	3)								
Jewellery and Silverware Manufacturers	1)								
Ophthalmic Goods Manufacturers	3)								
Orthopaedic and Surgical Appliance Manufacturers	1)	644	90	734	4,227,157	853,160	35,965,202	12,862,525	49,680,887
Sporting Goods Industry	2)								
Stamp and Stencil (Rubber and Metal) Manufacturers	2)								
Statuary, Art Goods, Regalia and Novelties Manufacturers	1)								
Venetian Blind Manufacturers	2)								
Rubber Industries	2)								
Leather Industries	3)								
Knitting Mills	1)								
Petroleum and Coal Products Industries	3)								
GRAND TOTAL - CALGARY	446	10,932	1,990	12,922	62,041,443	4,596,336	235,411,971	136,754,591	376,762,898

- (1) Rubber Industries - Rubber tire and tube manufacturers, 1; other rubber industries, 1 -- included in Miscellaneous Manufacturing Industries  
 (2) Leather Industries - Leather tanneries, 1; shoe factories, 1; miscellaneous leather products manufacturers, 1 -- included in Miscellaneous Manufacturing Industries  
 (3) Knitting Mills - Other knitting mills, 1 -- included in Miscellaneous Manufacturing Industries  
 (4) Commercial Printing - published in earlier years as two industries; "Printing and Bookbinding" and "Lithographing"  
 (5) Platemaking (including engraving), Typesetting and Bookbinding for the Trade - published in 1962 and earlier years as two industries; "Engraving and duplicate plates" and "Trade composition or typesetting"  
 (6) Petroleum and Coal Products Industries - Petroleum refineries, 2; other petroleum and coal products industries, 1 -- included in Miscellaneous Manufacturing Industries

Table 10 PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
EDMONTON - 1965

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added*	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
FOOD AND BEVERAGE INDUSTRIES:	99	4,730	1,169	5,899	27,321,583	1,539,464	150,496,751	54,280,885	206,317,100
Meat Products Industries:									
Slaughtering and meat packing plants	9	2,391	492	2,883	14,959,268	535,347	117,770,371	27,025,272	145,330,990
Dairy Products Industries:									
Butter and cheese plants	1)								
Pasteurizing plants	5)	886	153	1,039	4,343,087	352,354	12,211,253	9,729,223	22,292,830
Ice cream manufacturers	1)								
Grain Mills:									
Feed manufacturers	9	160	14	174	807,198	81,873	6,056,669	1,561,102	7,699,644
Bakery Products Industries:									
Bakeries	52	607	273	880	3,355,122	231,567	4,586,593	6,292,117	11,110,277
Beverage Manufacturers:									
Soft drink manufacturers	5	274	28	302	1,328,178	142,584	1,836,084	3,628,672	5,607,340
Breweries	3	161	9	170	998,038	101,299	1,954,765	3,369,571	5,425,635

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - EDMONTON - 1965 (Continued)

	Estab- lishments No.	Male No.	Female No.	Total No.	Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added <sup>a</sup> \$	Cost of Shipments of Goods of Own Manufacture \$
FOOD AND BEVERAGE INDUSTRIES: (Continued)									
Other Food Processors:									
Animal oils and fats plants	1)								
Biscuit manufacturers	1)								
Breakfast cereal manufacturers	1)								
Confectionery manufacturers	1)								
Fish products industry	1)	251	200	451	1,530,692	94,440	6,081,016	2,874,928	8,850,384
Flour mills	1)								
Fruit and vegetable canners and preservers	1)								
Miscellaneous food manufacturers, n.e.s.	3)								
Poultry processors	3)								
Sausage and sausage casing manufacturers	1)								
RUBBER INDUSTRIES: (1)									
LEATHER INDUSTRIES: (2)									
TEXTILE INDUSTRIES: (3)									
KNITTING MILLS: (4)									
CLOTHING INDUSTRIES:	12	348	1,641	1,989	6,199,618	51,218	11,721,076	10,242,768	22,015,062
Men's Clothing Factories	8)								
Women's Clothing Factories	3)	348	1,641	1,989	6,199,618	51,218	11,721,076	10,242,768	22,015,062
Fur Goods	1)								
WOOD INDUSTRIES	31	851	104	955	4,160,644	232,597	7,012,832	7,007,547	14,252,976
Sash and Door and Planing Mills	23	477	31	508	2,505,130	88,592	3,634,003	3,359,313	7,081,708
Veneer and Plywood Mills	2)								
Wooden Box Factories	1)								
Coffin and Casket Industry	2)	374	73	447	1,655,514	164,005	3,378,829	3,648,234	7,191,068
Wood Preservation	1)								
Miscellaneous Wood Products, n.e.s.	2)								
FURNITURE AND MIXTURE INDUSTRIES:	35	448	88	536	2,411,646	66,158	3,429,005	3,759,208	7,254,371
Household Furniture Industries	27)	448	88	536	2,411,646	66,158	3,429,005	3,759,208	7,254,371
Other Furniture Industries	8)								
PAPER AND ALLIED INDUSTRIES:	8	272	64	336	1,546,761	156,347	3,834,085	3,245,755	7,236,187
Pulp and Paper Mills	1)								
Asphalt Roofing Manufacturers	1)	213	37	250	1,287,621	151,009	3,500,161	2,668,184	6,319,354
Folding Box and Set-Up Box Manufacturers	1)								
Corrugated Box Manufacturers	1)								
Paper Bag Manufacturers	1)								
Miscellaneous Paper Converters	3	59	27	86	259,140	5,338	333,924	577,571	916,833
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	55	808	300	1,108	5,425,818	99,632	4,626,242	11,568,577	16,294,451
Commercial Printing (5)	33)	718	262	980	4,912,763	91,239	4,237,103	10,809,966	15,138,308
Printing and Publishing	4)								
Plate Making (including Engraving), Typesetting and Bookbinding for the Trade (6)	10	71	22	93	408,290	8,393	258,126	572,760	839,279
Publishing Only	8	19	16	35	104,765	-	131,013	185,851	316,864
PRIMARY METAL INDUSTRIES: (7)									
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	91	2,233	144	2,377	11,739,424	384,670	23,157,589	18,573,910	42,116,169
Fabricated Structural Metal Industry	5	425	23	448	2,311,743	59,974	6,648,421	3,257,087	9,965,462
Ornamental and Architectural Metal Industry	16	371	34	405	1,578,702	47,260	2,827,973	2,053,574	4,928,816
Metal Stamping, Pressing and Coating Industry	21	341	32	373	1,808,832	62,850	6,967,014	4,285,085	11,314,949
Wire and Wire Products Manufacturers	4	43	2	45	165,780	5,634	273,549	332,088	611,251
Hardware, Tool and Cutlery Manufacturers	4	45	5	50	206,933	6,250	99,000	315,641	420,891
Machine Shops	32	695	33	728	3,905,006	132,679	4,222,864	6,340,375	10,695,918
Boiler and Plate Works	2)								
Heating Equipment Manufacturers	3)	313	15	328	1,764,428	70,014	2,118,768	1,990,100	4,178,882
Miscellaneous Metal Fabricating Industries	4)								
MACHINERY INDUSTRIES: (Except Electrical Machinery)	7	139	5	144	704,711	42,499	987,614	1,238,764	2,268,877
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	7	139	5	144	704,711	42,499	987,614	1,238,764	2,268,877
TRANSPORTATION EQUIPMENT INDUSTRIES:	22	780	63	823	4,040,096	96,810	3,171,488	5,081,005	8,349,303
Aircraft and Parts Manufacturers	4)								
Truck Body and Trailer Manufacturers	13)								
Motor Vehicle Parts and Accessories Manufacturers	2)	780	63	823	4,040,096	96,810	3,171,488	5,081,005	8,349,303
Boatbuilding and Repairs	1)								
ELECTRICAL PRODUCTS INDUSTRIES: (8)									
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	30	1,052	74	1,126	5,840,208	1,320,519	13,161,744	22,551,008	37,033,271
Concrete Products Manufacturers	13	304	11	405	1,947,624	105,870	3,924,760	4,175,998	8,208,628
Ready-Mix Concrete Manufacturers	6	203	7	210	984,647	239,118	5,787,781	2,856,732	8,863,609
Cement Manufacturers	2)								
Clay Products (Domestic Clays)	1)								
Stone Products Manufacturers	1)								
Mineral Wool Manufacturers	1)	455	56	511	2,007,937	975,533	3,466,223	15,518,278	10,963,034
Glass Products Manufacturers	3)								
Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	3)								
PETROLEUM AND COAL PRODUCTS INDUSTRIES:	6	508	20	627	4,394,248	958,339	65,459,891	22,081,876	88,500,106
Petroleum Refining	3)								
Manufacturers of Lubricating Oils and Greases	2)								
Miscellaneous Petroleum and Coal Products Industries, n.e.s.	1)	508	20	627	4,394,248	958,339	65,459,891	22,081,876	88,500,106





PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - LETHBRIDGE - 1965 (Continued)

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>o</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	10	254	4	258	1,192,800	33,319	4,358,061	5,657,200	10,048,580
Boiler and Plate Works	1)								
Fabricated Structural Metal Industry	2)								
Machine Shops	4)	254	4	258	1,192,800	33,319	4,358,061	5,657,200	10,048,580
Ornamental and Architectural Metal Industry	2)								
Miscellaneous Metal Fabricating Industries, n.e.s.	1)								
MACHINERY INDUSTRIES: (Except Electrical Machinery)	4	66	4	70	300,267	10,814	558,599	641,683	1,211,096
Agricultural Implement Industry	3)								
Miscellaneous Machinery and Equipment	1)	66	4	70	300,267	10,814	558,599	641,683	1,211,096
Manufacturers, n.e.s.	1)								
ELECTRICAL PRODUCTS INDUSTRIES: (4)									
TRANSPORTATION EQUIPMENT INDUSTRIES: (5)									
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	10	135	5	140	585,156	97,091	804,381	1,129,180	2,030,652
Concrete Products Manufacturers	8	54	3	57	188,462	14,679	270,444	254,010	539,133
Ready-Mix Concrete Manufacturers	2)								
Lime Manufacturers	1)	81	2	83	396,694	82,412	533,937	875,170	1,491,519
Miscellaneous Non-Metallic Mineral Products, n.e.s.	1)								
MISCELLANEOUS MANUFACTURING INDUSTRIES:	21	208	152	360	1,317,291	32,071	2,997,244	3,653,638	6,682,953
Dental Laboratories	5	6	7	13	58,788	703	38,035	97,964	136,702
Broom, Brush and Mop Industry	1)								
Clothing Industries	1)								
Electrical Products Industries	1)								
Printing, Publishing and Allied Industries	5)								
Signs and Displays Industry	3)	202	145	347	1,258,503	31,368	2,959,209	3,555,674	6,546,251
Textile Industries	2)								
Transportation Equipment Industries	2)								
Venetian Blind Manufacturers	1)								
GRAND TOTALS - LETHBRIDGE	83	1,603	361	1,964	7,840,525	629,603	54,944,522	25,864,119	81,438,244

- (1) Textile Industries - Canvas products, 1; Miscellaneous Textile Industries, 1 -- included in Miscellaneous Manufacturing Industries  
(2) Clothing Industries - Women's Clothing Factories, 1 -- included in Miscellaneous Manufacturing Industries  
(3) Printing, Publishing and Allied Industries - Commercial Printing, 4; Printing and Bookbinding, 1 -- included in Miscellaneous Manufacturing Industries  
(4) Electrical Products Industries - Communications Equipment Manufacturers, 1 -- included in Miscellaneous Manufacturing Industries  
(5) Transportation Equipment Industries - Truck Body and Trailer Manufacturers, 1; Motor Vehicle Parts and Accessories Manufacturers, 1 -- included in Miscellaneous Manufacturing Industries

Table 12 PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
MEDICINE HAT - 1965

	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>o</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
FOOD AND BEVERAGE INDUSTRIES:	15	296	70	366	1,463,581	103,968	10,112,800	2,352,942	12,569,710
Bakery Products Industries:									
Bakeries	4	15	18	33	85,352	5,780	110,048	140,856	256,684
Beverage Manufacturers:									
Soft drink manufacturers	3	37	2	39	140,446	19,501	224,286	300,741	544,528
Other Food Processors:									
Feed manufacturers	1)								
Flour mills	2)								
Pasteurizing plants	2)								
Sausage and sausage casings	1)	244	50	294	1,237,783	78,687	9,778,466	1,911,345	11,768,498
Vegetable oil mills	1)								
Miscellaneous food manufacturers, n.e.s.	1)								
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	5	71	3	74	259,395	7,227	353,875	676,213	1,037,315
Heating Equipment Manufacturers	1)								
Machine Shops	1)	71	3	74	259,395	7,227	353,875	676,213	1,037,315
Miscellaneous Metal Fabricating Industries	3)								
MISCELLANEOUS MANUFACTURING INDUSTRIES:	19	779	58	837	4,096,847	708,826	14,295,668	11,364,460	26,368,954
Dental Laboratories	1)								
Signs and Displays Industry	2)								
Rubber Industries	1)								
Furniture and Fixture Industries	2)								
MISCELLANEOUS MANUFACTURING INDUSTRIES: (Continued)									
Printing, Publishing and Allied Industries	4)	779	58	837	4,096,847	708,826	14,295,668	11,364,460	26,368,954
Agricultural Implement Industries	1)								
Transportation Equipment Industries	1)								
Non-Metallic Mineral Products Industries	6)								
Chemical and Chemical Products Industries	1)								
GRAND TOTALS - MEDICINE HAT	39	1,146	131	1,277	5,819,823	820,021	24,762,343	14,393,615	39,975,979

- (1) Included in "Miscellaneous Manufacturing Industries"  
(2) Includes: Ready-Mixed Concrete Manufacturers, 2; Clay Products from domestic clays, 2; Clay Products from imported clays, 1; glass manufacturers, 1

Table 13

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES  
RED DEER - 1965

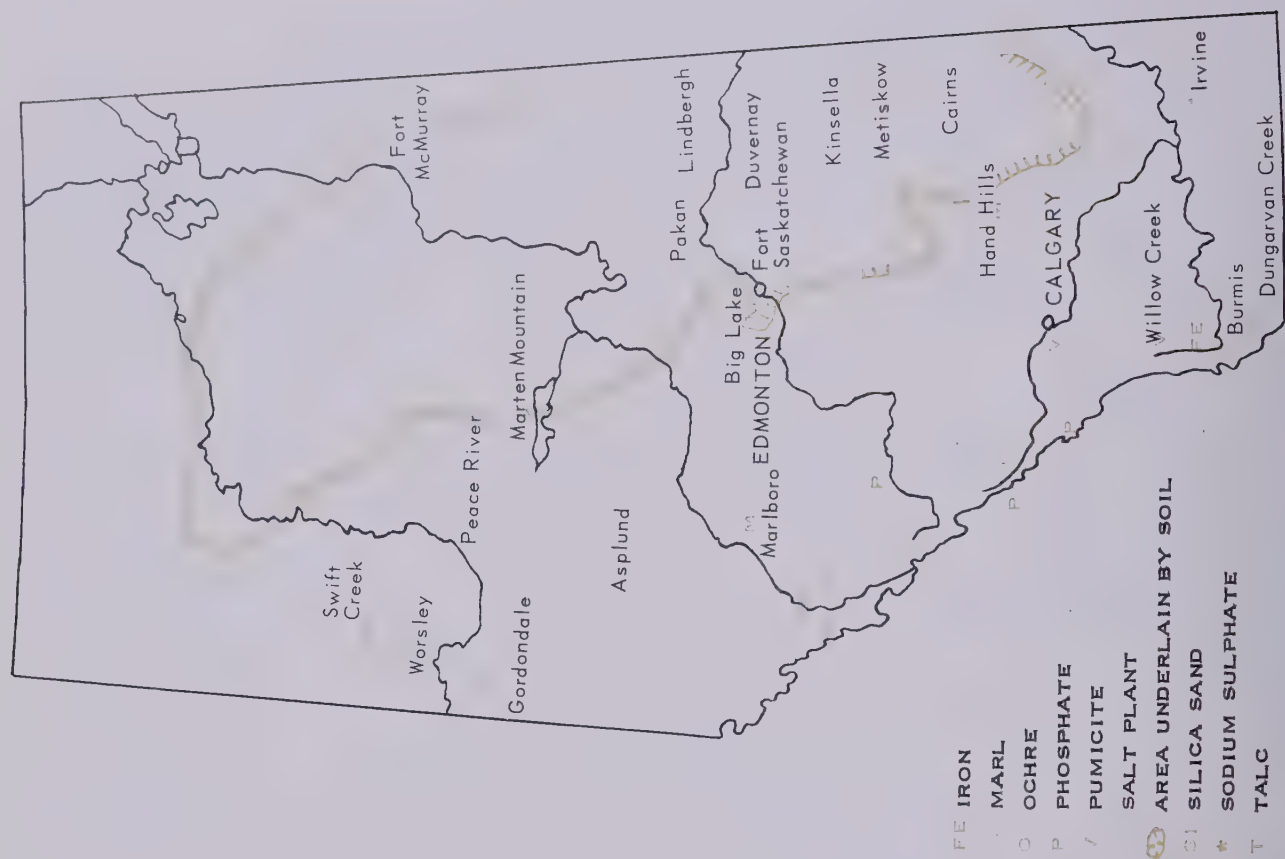
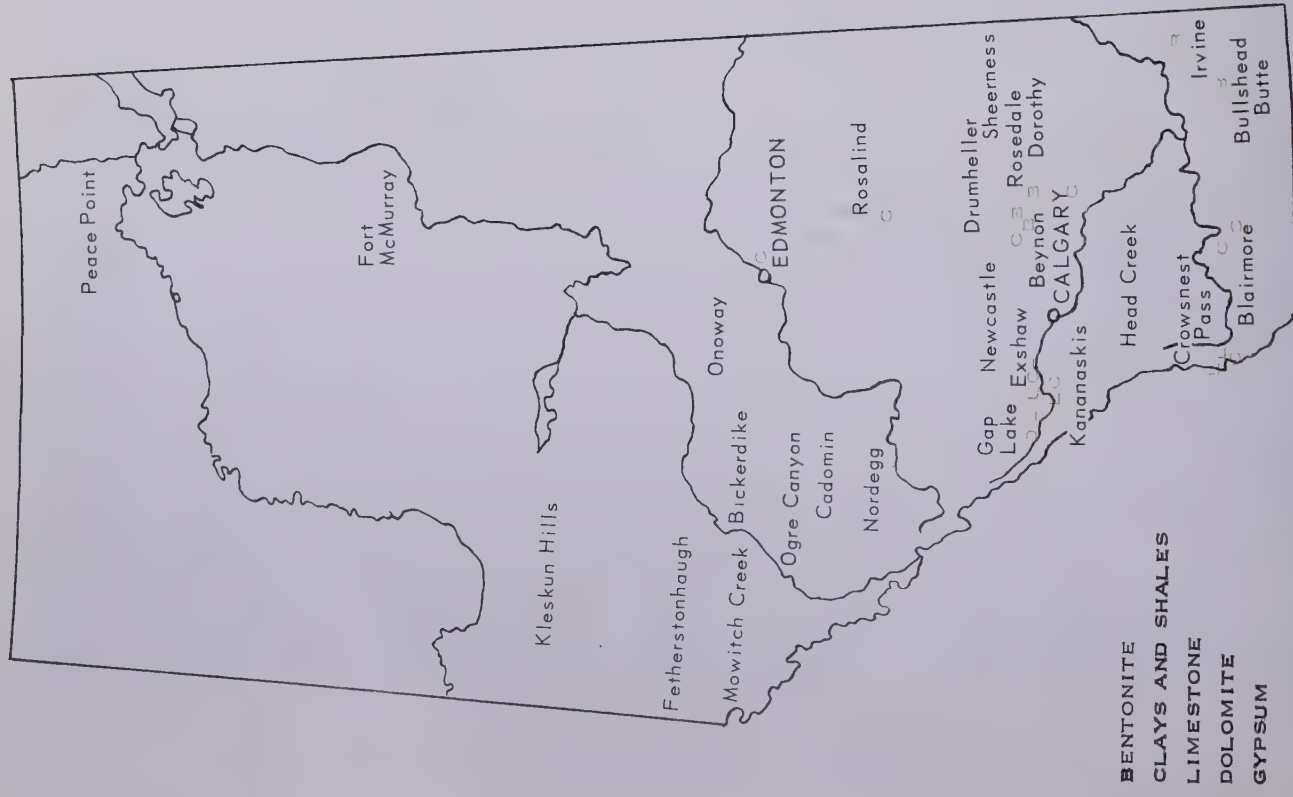
	Estab- lishments	Employees			Salaries and Wages	Cost of Fuel and Electricity	Cost of Materials and Supplies Used	Value Added <sup>2)</sup>	Value of Shipments of Goods of Own Manufacture
	No.	Male No.	Female No.	Total No.	\$	\$	\$	\$	\$
FOOD AND BEVERAGE INDUSTRIES:	15	308	65	373	1,572,763	166,034	16,104,285	4,743,996	21,014,315
Beverage Manufacturers:									
Soft drink manufacturers	2)								
Breweries	1)	83	6	89	450,943	56,169	556,747	1,225,546	1,838,462
Other Food Processors:									
Bakeries	4)								
Butter and cheese plants	1)								
Condenseries	1)								
Feed mills	1)	225	59	284	1,121,820	109,865	15,547,538	3,518,450	19,175,853
Pasteurizing plants	2)								
Poultry processors	1)								
Slaughtering and meat packing plants	2)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	4	53	15	68	328,279	7,441	132,818	654,263	794,522
Commercial Printing	3)	53	15	68	328,279	7,441	132,818	654,263	794,522
Printing and Publishing	1)								
MISCELLANEOUS MANUFACTURING INDUSTRIES:	16	136	19	155	573,734	15,587	2,104,092	1,027,066	3,146,745
Dental Laboratories	4	4	2	6	22,050	527	12,487	37,265	50,279
Agricultural Implement Industry	2)								
Concrete Products Manufacturers	1)								
Electrical Products Industries	1)								
Furniture and Fixture Industries	1)								
Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries)	3)	132	17	149	551,684	15,060	2,091,605	989,801	3,096,466
Sash and Door and Planing Mills	2)								
Transportation Equipment Industries	1)								
Signs and Displays	1)								
GRAND TOTALS - RED DEER	35	497	99	596	2,474,776	189,062	18,341,195	6,425,325	24,955,582

(1) Included in "Miscellaneous Manufacturing Industries"



*Working with private industry the Alberta Research Council develops new processes and products  
utilizing the province's natural resources.*





KNOWN OCCURRENCES OF INDUSTRIAL MINERALS

# INDUSTRIAL MINERALS

Excepting 10,000 square miles in the northeast corner, Alberta is a sedimentary basin overlain by a thick mantle of glacial till. As a consequence, the mineral wealth of the province is derived principally from the exploitation of non-metallics of glacial and sedimentary origin. Many industrial minerals occur in the Tertiary and Upper Cretaceous sediments where the overburden is shallow; this makes stripping and quarrying low cost methods of extraction.

Industrial minerals, mainly non-metallic and structural materials, are important not only because of their direct contribution to regional growth but also because of the linkage they establish between succeeding stages of production. The importance of these materials is enhanced because of their close association with the petroleum and petrochemical industries, both as input and processing requirements and as by-products or co-products at the extractive stage.

Most industrial minerals are basic material inputs used in indigenous industries and construction of all kinds. Of low value per unit of weight or volume, they cannot be transported long distances without significantly increasing their cost. For this reason industrial minerals do not generally enter into export trade. Their increasing use reflects Alberta's industrial growth and diversification.

The total value of production of industrial minerals increased from \$1 million in 1936 to \$70 million in 1966. This represents 8.0 per cent of total mineral production value.

More detailed technical explanations of required specifications, as well as properties and location of industrial mineral deposits will be provided upon request by the Research Council of Alberta.

## ABRASIVES

Abrasives are used to cut, grind, polish, abrade, scour, or clean by removing solid material by rubbing or impact. Specifications depend on the particular abrasive material and its use.

In Alberta, sand for sand blasting is obtained from local deposits of river, beach or dune sand. Other Alberta natural materials which might be potential abrasives are garnet, feldspar, pumicite, and pebbles. Garnet is common in the glacial deposits throughout Alberta and has been concentrated in alluvial gravels, particularly in some parts of the South Saskatchewan and Milk Rivers, but data on the concentrations or abrasive quality of this garnet are not available. Some glacial and alluvial sands might be sources of feldspar should a demand for it arise. Deposits of pumicite, which is used as an abrasive mostly in cleaning and scouring compounds, are widespread in Alberta. Some information on these deposits is given in the section on cement.

Quartzite pebbles derived from the Cypress Hills conglomerate and washed into stream beds along the northern flank of the Cypress Hills, have been used in ball mills in British Columbia. Tests show them to be comparable in quality to commercially used Danish flint pebbles. Quartzite pebbles derived from the same source — quartzite formations in the Rocky Mountains — and transported by the same agent, rivers, have been

deposited in present-day river beds. Gravel from many places in river beds contains more than 80 per cent quartzite pebbles in the fraction greater than 8 millimetres. Some gravels from the North Saskatchewan River between Genesee and Drayton Valley, and from the Athabasca River at Fort Assiniboine and Whitecourt contain more than 90 per cent quartzite pebbles in the same fraction. The colour of these pebbles ranges from white through buff to brown. Some when crushed might be suitable for use in facings such as terrazzo.

## BENTONITE

Bentonite is a fine grained, ash-like clay, composed essentially of minerals of the montmorillonite group. A high capacity for ion exchange and a very high surface area are two of bentonite's numerous properties. Bentonite may be broadly classified into two main types — swelling and non-swelling. In the swelling variety, the predominant exchangeable ion is sodium; in the non-swelling variety it is calcium. Because of its high surface area, bentonite has the ability to adsorb certain impurities from liquids. Treatment with sulphuric acid (activation) increases adsorption properties appreciably.

Bentonite is a very soft rock mined with comparative ease and inexpensively in surface pits. Strict supervision is required to ensure quality control. Processing mainly involves drying, pulverizing and classifying. Consumption of the swelling varieties is much greater than of the non-swelling.

Select swelling bentonite is employed as a binder in the pelletizing of iron mineral concentrates, a use which is expected to increase significantly. Swelling bentonite

Table 14

## BENTONITE DEPOSITS OF ALBERTA

Location	Geological Formation or Group	Thickness (feet)	Yield (barrels per ton)	Sand or Silt Content (per cent)	Remarks
Along Rosebud River near Beynon SE 32-27-20-4	Edmonton	3 1/2	51	0.2	Extent unknown; below 2 1/2 foot coal seam.
Along McLeod River 200 yards upstream from CNR bridge near Bickerdike 6-52-18-5	Saunders	6-8	low	--	Inferior decolorizing properties; a small quantity used for cosmetics in the past; under heavy overburden.
In Red Deer River valley near Dorothy	upper part of Bearpaw	20	30	--	Exposed for several miles under low overburden.
Ridge 1 1/2 miles north of Drumheller NW 14-29-20-4	Edmonton	3	56	2.3	Mined intermittently for a number of years; an untreated sample had decolorizing ability 60% of that of commercial Floridin clay.
North flank of Kleskun Hills SE 27-72-4-6	Wapiti	4	40-60	--	Small lenses of limited extent.
Near Irvine NW 30-11-2-4	100 feet from base of Bearpaw	1-5	38	--	Surrounds Cypress Hills on north and west; under 5 - 10 feet of overburden.
Bullshead Butte NE 2-8-7-4	Bearpaw	2	58	--	Small deposit; under 10 - 15 feet of overburden.
Newcastle SE 9-29-20-4	Edmonton	5-10	42-66	4-12	Under light overburden.
Aetna coal mine at Rosedale	Edmonton	0.5-0.7	90	trace	As parting in No. 1 coal seam.
Sheerness	Edmonton	1-5	43-58	0.5-1.7	In overburden above coal seam being strip-mined; brown bentonite overlies olive green.



is used in well drilling fluids where it controls viscosity, prevents the settling of drill cuttings and retains drilling fluid by coating the drill-hole wall. It serves as a binder in moulding sands used by iron and steel foundries and in the pelletizing of zinc concentrates and stock feeds. It is used to plasticize abrasive and ceramic raw mixes, as a filler in paper, rubber, pesticides, cosmetics, medicine products, soaps and cleansers; in sealing such structures as dams, and reservoirs; as an ingredient of aerial bombs in fighting forest fires; and in the strengthening of retaining walls of excavations prior to the placement of concrete or other structural materials.

Some non-swelling bentonite is used in pelletizing stock feed, as a carrier for pesticides, as a binder in some low-temperature foundries, and in certain pet cleansing powders.

Activated bentonite is used in decolourizing vegetable and mineral oils, animal fats, wines, beverages and syrups. It is also used as a catalyst in the refining of liquid hydrocarbons.

Most Alberta bentonite deposits are of the swelling variety. Swelling bentonite is recovered from the Edmonton Formation at Rosalind and Onoway. It is dried, pulverized, and sized for use mainly in drilling muds. Combined daily rated capacity is 180 short tons.

## CEMENT

Hydraulic cements have the property of hardening under water. The best known and most widely used is "portland cement" which, when mixed with water and allowed to hydrate, yields a ceramic material used to bind aggregates (crushed stone, gravel and sand) together into "concrete".

Portland cement is a versatile structural and general construction material utilized in sewer and water works, as a paving material for constructing and stabilizing permanent roads, in highway bridges, viaducts and so forth.

Masonry cements are mixtures of portland cement, finely ground limestone, and a plasticizer. They are used as mortar for bricklaying or other masonry work.

Pozzolan is a siliceous material which in itself possesses little cement value. However, in finely divided form and in the presence of moisture, pozzolans react with calcium hydroxide to form compounds possessing cementitious properties. When properly used in cement, pozzolans can retard or prevent alkali-aggregate reaction, increase resistance to sulfate-carrying waters, reduce heat generation in massive structures, increase tensile strength, reduce permeability and improve workability.

In addition, to each of these types may be added an air-entraining agent (such as resin, rosin or other chemicals) which cause, during mixing of concrete, the retention of microscopic air bubbles, giving superior resistance to deterioration by freezing and thawing and to attack by de-icing salts used on concrete roads.

The raw materials used for cement are numerous and can be used in a number of combinations, but essentially they may be divided into four components: lime, silica,

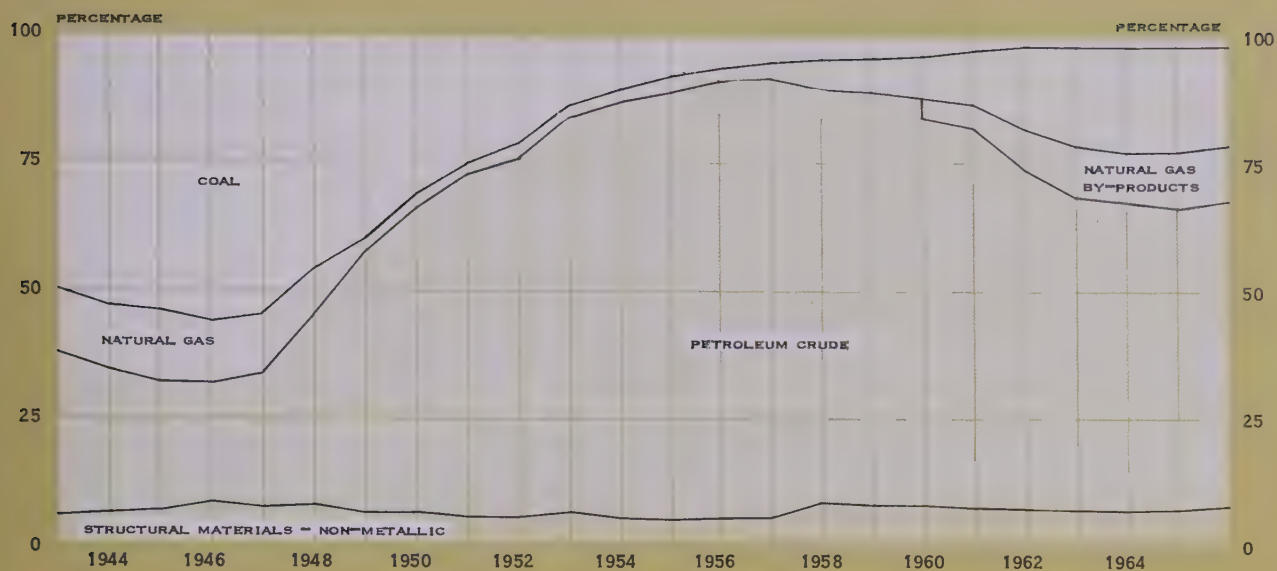
Table 15

## MINERAL PRODUCTION, ALBERTA, 1947 - 1967

PRODUCT	1947	1949	1951	1956	1961	1962	1963	1964	1965	1966	1967 +
<b>COAL</b>											
Tons	8,070,430	8,616,855	7,659,329	4,328,787	2,027,826	2,087,310	2,289,943	2,971,133	3,413,928	3,467,254	3,626,000
\$	36,439,158	44,644,153	40,981,581	23,274,012	10,472,978	9,969,608	9,864,890	11,182,833	12,173,846	11,947,258	12,200,000
<b>NATURAL GAS</b>											
M. Cu. Ft.	44,106,643	51,179,779	69,876,831	146,133,893	500,843,300	770,963,122	943,354,973	1,184,754,869	1,225,826,579	1,090,691,124	1,180,000,000
\$	7,745,886	2,558,989	3,433,842	10,960,042	46,882,365	88,660,759	129,428,302	149,594,796	162,426,142	146,215,000	162,031,000
<b>Oil and Natural Gas By-Products</b>											
Bbls.	-	-	-	-	-	46,190,893	66,679,857	73,338,176	86,789,061	94,116,979	102,305,000
<b>Petroleum, Crude</b>											
Bbls.	6,770,477	20,087,418	45,915,384	143,909,641	157,811,712	165,124,967	168,214,054	175,441,589	188,298,021	203,339,433	231,587,000
\$	18,078,907	58,999,936	113,870,152	353,629,158	355,530,845	379,830,363	416,844,350	450,186,921	474,385,000	524,005,719	613,241,500
<b>STRUCTURAL MATERIALS</b>											
Clay Products	1,771,250	1,603,199	1,787,731	3,038,544	3,517,473	3,445,687	3,452,835	3,787,609	3,555,006	3,422,614	4,121,742
Cement	737,551	1,659,503	1,649,909	3,440,931	3,873,794	4,565,886	4,154,983	4,411,297	4,981,360	4,699,200	5,031,920
\$	1,491,510	3,456,141	3,898,043	9,258,016	12,420,025	14,780,423	13,713,527	14,346,958	15,597,836	15,685,259	17,910,266
Lime	25,733	27,071	30,670	41,309	47,506	48,138	54,826	59,706	61,207	72,875	65,625
\$	235,509	295,441	395,452	624,060	838,365	842,615	970,673	1,115,551	1,154,931	1,316,557	1,219,172
* Sand and Gravel	2,058,142	2,448,814	4,289,021	10,522,441	12,591,844	13,469,848	16,139,744	16,777,687	14,377,337	12,886,213	14,920,000
\$	1,170,883	1,553,589	3,194,446	8,877,806	10,927,057	12,644,098	14,894,547	13,302,424	11,437,693	10,298,933	14,310,000
Stone	13,883	13,632	13,310	66,820	96,753	105,695	138,894	129,364	167,782	144,433	180,444
\$	57,600	55,025	46,820	343,166	337,150	388,608	416,426	417,024	522,096	544,737	702,122
<b>METALS</b>											
Gold	78	115	97	119	171	186	132	59	200	182	130
Fine Oz.	2,730	4,140	3,574	4,100	6,064	6,958	4,983	2,227	7,546	6,863	4,907
Silver	16	11	9	14	17	17	12	4	19	17	12
Fine Oz.	12	8	8	12	16	20	17	6	26	23	21
<b>NON-METALLICS</b>											
Peat Moss	-	-	-	-	-	-	780	4,404	4,536	6,515	7,578
Tons	-	-	-	-	-	-	27,906	222,369	203,800	121,083	222,784
Quartz	-	700	-	-	-	-	-	-	-	-	2,530
Tons	-	10,500	-	-	-	-	-	-	-	-	53,200
Salt	29,698	28,359	19,718	46,654	83,880	90,729	96,417	101,411	115,706	122,814	134,150
\$	438,625	547,304	472,562	1,162,982	1,355,074	1,454,462	1,496,577	1,593,430	1,815,828	1,772,947	1,911,650
Sulphur, Elemental	-	-	-	-	339,080	628,194	1,169,460	1,702,950	1,946,435	1,933,920	2,220,000
Tons	-	-	-	-	6,133,261	8,308,209	11,516,478	16,806,139	24,121,809	37,224,660	66,600,000
<b>TOTAL VALUE</b>	67,432,270	113,728,425	168,144,211	411,171,898	473,480,540	566,502,703	669,311,368	735,896,463	794,170,720	846,678,642	996,833,364

\* Sand and gravel are not legally minerals in Alberta but are part of the surface in accordance with the Sand and Gravel Act, 1951.

+ Preliminary



VALUE OF MINERAL PRODUCTION, CANADA, ONTARIO, QUEBEC, ALBERTA AND OTHER PROVINCES, 1943-1966



alumina, and iron. Raw materials for portland and masonry cements include a calcareous or lime-bearing component such as high calcium limestone, cement rock, marl, coquina and a non-calcareous component such as clay, shale, iron oxide or gypsum; those for pozzolan include diatomaceous earth, opaline cherts and shales, clays, tuffs, pumicites and fly ash. Clay, shale and high-calcium limestone are currently used in Alberta for the production of portland and masonry cements. Plants in Edmonton and Exshaw have a combined rated annual capacity of 8.3 million barrels. The small amount of iron oxide required in these cement plants is obtained as a by-product from industries within Alberta or adjacent provinces. Facilities exist in Alberta for bulk and bagged cement shipments by rail and truck. In 1966 production was 844,500 tons of cement, valued at \$16,676,000.

A Devonian limestone formation, 500 feet thick and containing more than 96 per cent  $\text{CaCO}_3$  and one to two per cent  $\text{MgCO}_3$ , is quarried at Cadomin. The limestone is burned in a plant at Edmonton along with clay. The clay deposits are 50 feet or more thick, containing 62.2 per cent  $\text{SiO}_2$  and 19.6 per cent  $\text{Al}_2\text{O}_3$ .

Marls are earthy, friable accumulations of calcareous material secreted by plants and animals. Over long periods of time the skeletal remains of plants mixed with shells of animals may form beds as much as 30 feet thick, containing material suitable for cement manufacture. Small deposits are widespread in Alberta, such as that underlying the conglomerate capping the Hand Hills, and another northwest of Edmonton at Big Lake.

Coquina is a rock consisting mostly of broken shells. A deposit of coquina consisting of fossil oysters, ranging in thicknesses up to 15 feet, is exposed 12 miles northwest of Cardston, near Hillspring, along the Belly River.

Although no natural pozzolans have been produced in Alberta, pumicite and montmorillonite-bearing clays and shales are available in Cretaceous and Tertiary strata. Deposits have not been tested for pozzolanic properties but some samples contain a high proportion of volcanic glass, an active ingredient in natural pozzolans elsewhere. Pozzolanic properties can be improved by calcination.

Fly ash, an artificial form of pozzolan, is a fine-grained ash consisting mostly of silica, alumina and iron oxide. Fly ash is used in cement for oil wells and in concrete for dams, for stabilizing soils, for making bricks, and as a filler in asphalts, plastics and paints. In Alberta, fly ash is produced at Drumheller, Forestburg and Wabamun in coal-burning power-generating plants. The amount of fly ash recovered depends on the ash content of the coal, the slagging temperature of the ash, the amount of coal burned and the efficiency of the collecting equipment. At Wabamun residue fly ash is upgraded to the American Society for Testing Materials specifications.

#### CLAY AND CLAY PRODUCTS

Clay is an earthy, easily disintegrated, widely distributed mineral deposit. To date, the better quality clays such as china or kaolin, ball and fire clay have not been found in Alberta. Some good quality deposits of ball and fire clay are known to exist relatively close to Alberta in the Whitemud Formation in southern Saskatchewan. Clay from that area has been used for many years in the potteries at Medicine Hat.

Stoneware clays are similar to low-grade plastic fire clays. Their principal clay mineral is kaolinite. They are used in manufacturing sewer pipe, flue liners, facing brick, pottery, stoneware crocks, jugs and chemical stoneware. Considerable deposits of stoneware and lower grade refractory clays occur in the Whitemud Formation of southeastern Alberta and along the Athabasca River in northeastern Alberta. The Whitemud Formation is exposed in southern Alberta on the flanks of the Cypress Hills, where it consists of up to 25 feet of light grey clay, brown clay and argillaceous silt, in thin beds showing rapid horizontal changes in lithology and ceramic properties. Although they increase in thickness and quality eastward, the deposits in the western part of the Cypress Hills are more accessible and covered by thinner overburden. These clays are in beds about three feet thick, and covered by 10 to 30 feet of overburden, some of which is clay of stoneware grade. Stoneware clay pits are located in the Cypress hills, southeast of Medicine Hat. Many of the clays in the Whitemud Formation could be improved by simple treating or blending.

Some clays lying on the pre-Cretaceous erosion surface of Devonian limestone beneath the oil sands of the McMurray Formation north of Fort McMurray may be of value as semi-fireclays or stoneware clays. They are extremely variable, ranging from clays which have no ceramic value to semi-fireclays.

Common clays and shales are ordinarily a heterogeneous mixture composed of clay minerals and various other minerals such as quartz, feldspar, mica, goethite, siderite, pyrite, carbonaceous material, gypsum, calcite, dolomite, hornblende and many others. Clays and shales suitable for clay products manufacture usually contain 15 to 35 per cent silt-sized quartz. Because of the presence of iron, common clays and shales usually fire to a salmon or red colour. Common clays and shales are usually higher in alkali and iron-bearing minerals and much lower in alumina than the high-quality stoneware clays, fire clays and ball clays. Since shales are less plastic than clays, they must be finely ground when used for extruded ware so that plasticity may be developed or they must be combined with a plastic clay or some plasticizer.

Common clays and shales are the principal raw materials available for the manufacture of clay products. They are used mainly for the manufacture of common and facing brick, structural tile, partition tile, conduit, quarry tile and drain tile.



*Mining the Athabasca oil sands is the job of these giant bucketwheel excavators.*



Common clay and shale deposits are widespread in Alberta. The brick-making qualities of clays and shales in several formations are given in the table below.

Table 16 CLAYS AND SHALES FOR BRICK AND TILE IN ALBERTA

System	Formation or Group	Remarks
Lower Cretaceous	Blairmore	Free from drying defects; strippable deposits are few and small; will make good quality brick and tile.
Upper Cretaceous	Alberta	Very low plasticity otherwise suitable for bricks.
Upper Cretaceous	Foremost and Oldman	Variable lithology, highly plastic and difficult to dry; drying difficulty can be overcome by preheating, chemical treatment, or using more sandy clays.
Upper Cretaceous	Bearpaw	Undesirable white scum forms during firing on bricks
Upper Cretaceous	Edmonton	Similar to Foremost and Oldman Formations, but have higher plasticity and shrinkage; might be improved by preheating or chemical treatment.
Upper Cretaceous	Whitemud	Suitable, but exposed only in Cypress Hills far from manufacturing centres.
Tertiary	Paskapoo	Shaly parts are suitable, but sandstone is more common in outcrops; calcareous shales make buff-colored porous bricks.
Quaternary	Pleistocene	High plasticity and high shrinkage might be overcome by proper treatment; siltier clays are suitable.

In the structural clay products industry, four plants are in operation in southeastern Alberta using local clays.

In the porcelain and pottery products industry, five firms are presently operating in Calgary, Athabasca, Medicine Hat and Redcliff.

#### DIMENSION STONE

Dimension stone is a term applied to stone sold in blocks or slabs of specified shapes or sizes and includes cut stone, rough building stone, ashlar, monumental stone, flagstone, curbstone, and ornamental stone. The value of dimension stone varies from less than \$5 per ton to more than \$200 per ton depending on the type of rock and the amount of cutting, polishing, and buffing it receives. Alberta stone quarry production in 1966 was 144,000 short tons valued at \$545,000.

The only dimension stone presently quarried in Alberta is known as Rundle stone. It is a hard, flaggy, medium grey, dolomitic siltstone from the Triassic Spray River Formation at Canmore, and is used as rough building stone. Similar rock along the Spray River has been used at Banff as rock-face ashlar.

Field stone — erratic boulders of granite, gneiss, basic igneous rocks, and quartzite from glacial deposits — is used for interior and exterior facings and decorations on houses and buildings. Pinkish Lower Cambrian St. Piran quartzite from rock slides has been used for building stone at Jasper. Quartzite cobbles have also been



used. Similar cobbles are abundant in some river beds in the western part of Alberta. Flat-lying Devonian limestones near Fort McMurray in northwestern Alberta are promising building stones. Small amounts of tufa from Big Hill and Radnor have been used as decorative stone. Although most Cretaceous and Tertiary sandstones have unattractive colours, poor weathering properties, and are soft, some from the Cretaceous Oldman Formation and the Tertiary Paskapoo Formation have good characteristics. These sandstones were quarried for building stone before 1914. Rocks in sills in the Precambrian Kinsella Formation in North Kootenay Pass and certain porphyries and breccias of the Cretaceous Crowsnest volcanic rocks near Coleman make attractive ornamental stone.

## DOLOMITE

Dolomite is used chiefly as a flux in the smelting of iron and other metals to control the fluidity of the slag; as a refractory material for patching open hearth furnaces; and as a source of agricultural magnesium. Other uses are in the extraction of magnesia from sea water, in production of basic magnesium carbonate for use as a heat insulator, and as road metal. When ground it can be used as a filler and when sized and of suitable colour it can be used as stucco dash. Although large quantities are available in the Rocky Mountains, few deposits have been tested for usefulness and no dolomite is being quarried in Alberta.

Table 17 DOLOMITE DEPOSITS OF ALBERTA

Location	Thickness (feet)	CaCO <sub>3</sub> (per cent)	MgCO <sub>3</sub> (per cent)	Remarks
Kananaskis	200	56.0	42.8	On easternmost mountain just north of railway; mostly pure dolomite interbedded with limestone and magnesium limestone at top and bottom; strikes N 60° W, dips 35° SW.
	500	55.4	43.6	
	70	55.7	44.0	
Gap Lake	40	55.4	44.3	North of highway opposite centre of lake; suitable for quarrying.
Nordegg	250	57.3	41.3	In cut at mile 146 of CNR; brown, medium-grained, compact.

## ELEMENTS IN FORMATION WATERS

The formation waters of some oilfields in Alberta carry high concentrations of certain elements. Although none are produced in Alberta, magnesium, bromine, and iodine are included.

Magnesium is used in alloys requiring high strength, light weight, resistance to corrosion, or ability to withstand high temperatures, and as a reducing agent in the production of uranium, titanium, beryllium, and zirconium. It is produced from sea water, dolomite, and magnesite. The concentrations of magnesium in some formation waters produced in Alberta are several times the 1,400 milligrams per litre in sea water. Thus, although reserves of raw materials elsewhere are almost unlimited, magnesium

might be profitably extracted from formation waters or brines which contain high concentrations and which have substantial production. The only Canadian producer, most of whose production is exported, uses dolomite as raw material for a plant in Ontario. Production in 1965 was 11,000 tons. Canadian consumption for 1965 was 4,500 tons which included 1,800 tons of imported metal.

Table 18 FORMATION WATERS WITH PRODUCTION OF MORE THAN 15,000 BARRELS  
IN 1966 AND WITH MORE THAN 4,200 MILLIGRAMS OF MAGNESIUM  
OR 800 MILLIGRAMS OF BROMINE PER LITRE

Formation		Magnesium		Bromine		Water Production (barrels in 1966)
		(milligrams per litre)	(pounds per barrel)	(milligrams per litre)	(pounds per barrel)	
Waterton	Turner Valley	6,287	2.2	--	--	32,937
Duhamel South	Leduc	2,316	0.8	899	0.31	42,427
Duhamel North	Leduc	5,863	2.1	437	0.15	26,718
Yekau Lake	Leduc	3,384	1.2	870	0.30	83,040
Acheson	Leduc	20,516	7.2	1,496	0.52	20,198
Clive	Leduc	3,504	1.2	936	0.33	144,702
Stettler	Nisku	2,652	0.9	931	0.33	68,778
Glen Park	Leduc	5,000	1.7	940	0.33	49,254
Bonnie Glen	Leduc	4,500	1.6	1,110	0.39	1,594
Golden Spike	Leduc	8,335	2.9	970	0.34	274,124
Malmo	Leduc	6,285	2.2	990	0.35	364,097
Erskine	Leduc	3,000	1.0	800	0.28	347,131
Leduc Woodbend	Leduc	3,135	1.1	1,211	0.42	488,156

Bromine is used chiefly as ethylene dibromide in gasoline antiknock compounds. It is also used as a bleaching and disinfecting agent, as a fumigating agent, in photography, and in metallurgy for the production of high-purity metals. Bromine is extracted from sea water, which contains 67 milligrams per litre; from well brines that contain 1,300 to 2,900 milligrams per litre; from salt lakes or seas, which contain up to 7,000 milligrams per litre; and from potash deposits, some of which contain up to 0.2 per cent bromine. The concentration of bromine in some formation water produced in Alberta is more than 10 times that in sea water, and approaches those in well brines from which bromine is extracted in the United States. These figures suggest that bromine might be obtained from local formation waters for use in gasoline. At present, however, reserves elsewhere, and the size of the local market, indicate that production of bromine in Alberta is uneconomic.

Iodine and its compounds are used in many ways: as an antiseptic and disinfecting agent; for human consumption in table salt, for seeding clouds to induce rainfall and suppress hail, for livestock and poultry feed, in photography, in metallurgy, in contrast mediums for X-rays, and as a radioactive isotope for diagnosis and therapy. Most of the world's iodine is produced from nitrate deposits in Chile; lesser amounts are obtained from oil-well brines in the United States, Japan, and Indonesia. These brines contain from 50 to 70 milligrams of iodine per litre. The formation waters or brines listed in the preceding table contain from 13 to 23 milligrams of iodine per litre with an average of 20 milligrams per litre or 0.007 pounds per barrel. Other formation waters in Alberta contain up to 44 milligrams of iodine per litre. Although the concentrations of iodine in brines from Alberta are lower than in brines from which iodine is obtained elsewhere, should magnesium or bromine be extracted, iodine might be recovered also.

## GYPSUM

Gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) is calcium sulfate combined with two molecules of water. Gypsum is inexpensive to mine and process, and its calcined products have a wide range of readily controllable properties such as strength, density, and setting time. Gypsum is used chiefly in the manufacture of gypsum products for the building trade; minor amounts are used in the manufacture of portland cement, serving as a strengthening and set-retarding agent.

Some very large deposits of gypsum in Alberta are not mined at present because they are within National Parks, are far from transfer facilities, or are of poor quality. Data on some of these deposits is given in the accompanying table.

Table 19 GYPSUM DEPOSITS IN ALBERTA

Locality	Stratigraphic Unit	Thickness (feet)	Gypsum (per cent)	Lateral Extent	Dip	Remarks
Peace Point	Middle Devonian	4 to 80 exposed	92	14 miles	flat and undulating	Three to 50 feet of overburden; transportation by river barge to Fort McMurray and thence by rail; in National Park; per cent gypsum is an average of 17 channel samples from parts of 10 sections.
Fort McMurray	Middle Devonian Elk Point	up to 180	88	Unknown	flat	Overlying strata are 400 to 520 feet thick in valleys of Athabasca and Clearwater Rivers near Fort McMurray; at railway; per cent gypsum is an average across 35 feet in one well; analysis from other wells show less gypsum.
Head Creek	Upper Devonian Palliser	16	65-70	200 feet	35° SW	Overburden is rubbly weathering dolomitic breccia and limestone; about 50 miles from railway at High River, and about 10 miles from gravelled road to Longview.
Mowitch Creek	Triassic	9 1/2 9 1/2 12	89 95 95	2 miles	35° - 78° SW	Overlain by limestones, shales, and sandstones; 35 miles from railway at Devona; in National Park.
Fetherstonhaugh Creek	Triassic	7 50	82 95	1180 yds.	30° SW	Overlain by vuggy limestone; 40 miles from railway at Loos, B. C.; per cent gypsum from channel samples across 19 feet.

The gypsum layers at Fort McMurray extend north to where they probably reach the surface about 75 miles away. There, if present, they are obscured by glacial drift. Other Middle Devonian gypsum deposits up to 50 feet thick along the Little Buffalo, Salt and Stone Rivers in northeastern Alberta and extending into adjacent parts of the Northwest Territories are even farther from markets and transfer facilities. Gypsum from Peace Point might well be transported about 600 miles by water and existing rail to arrive at the Edmonton market at competitive prices.

Plentiful supplies of gypsum are known to exist in the Smoky River headwaters area near the British Columbia border; these are now attracting considerable attention because of proximity to the Alberta Resources Railway. Although gypsum is not presently being mined in Alberta, two plants are manufacturing gypsum products at Calgary. The process is that of crushing, grinding and calcining; the products manufactured are plaster and wallboard. At present all raw gypsum is imported from British Columbia and Manitoba. Present consumption is of the order of 113,000 tons per year.

In recent years gypsum products have found a growing market in construction, especially house building, due primarily to quality advantage and ease of installation.





*A common Alberta scene.*



*Alberta parks offer much in the way of beauty and recreation.*

## HELIUM

Helium is a colourless, odourless, tasteless, and chemically inert gas. It is nonpoisonous, non-flammable, less soluble in water than any other gas, and is the most difficult of all gases to liquify and solidify. Next to hydrogen, it is the lightest known substance. Helium diffuses more rapidly, conducts heat better, and transmits sound at higher velocity than any other gas except hydrogen. It conducts electricity better than any gas except neon.

Helium is used as a lifting gas in airships, as an inert gaseous shield in welding, for detecting leaks in high-pressure and high vacuum systems, in producing titanium, for low temperature research, in medicine, and as a fuel expellent in rockets and guided missiles.

The only known economic source of helium is from helium-bearing natural gas. In the United States helium is extracted from natural gases that contain from 0.46 to more than 2.0 per cent helium. Canada's only helium producing plant, at Swift Current, Saskatchewan, has an annual capacity of 36 million cubic feet.

Table 20

ALBERTA NATURAL GAS WITH MORE THAN 0.2 PER CENT HELIUM

Location (Tp., R., Mer.) Formation			Helium (per cent)	Recoverable Gas at Dec. 31, 1966 (BCF)	Helium in Recoverable Gas (MMCF)	Gas Production in 1966 (MMCF)	Helium in Gas Produced in 1966 (MMCF)
GAS FIELD							
Comrey	1-7-4	Bow Island	0.24	9	21.6	995.9	2,390
Duhamel	45-21-4	Viking	0.21	4	8.4	0	0
Eaglesham	77-25-5	Mississippian	0.32	50	160.0	75.1	.240
Etzikom	6-8-4	Bow Island	0.33	28	92.5	2,217.6	7,318
Foremost	6-11-4	Bow Island	0.24	19	45.6	91.6	.219
Medicine Hat	13-3-4	Bow Island	0.36	9	32.4	71.7	.258
Normandville	80-22-5	Mississippian	0.42	23	96.6	248.4	1,043
Normandville	79-22-5	Jurassic	0.21	3	6.3	0	0
Pakowki	4-7-4	Bow Island	0.26	3	7.8	1,168.1	3,037
Smith Coulee	3-10-4	Bow Island	0.26	40	104.0	1,612.8	4,193
Willesden Green	43-6-5	Cardium	0.43	9	39.0	4,429.5	19,046
Worsley	87-7-6	Leduc	0.50	148	740.0	13,709.7	68,548
OIL FIELD							
Calais	70-23-5	Leduc	0.78	1	7.8	101.7	.793
Little Smoky	67-22-5	Leduc	0.65	2	13.0	77.4	.503
Sturgeon Lake South	69-22-5	Wabamun	0.98	2	19.6	153.2	1,501
Sturgeon Lake South	69-22-5	Leduc	0.39	76	296.4	2,918.5	11,382
Willesden Green	42-6-5	Cardium	0.43	85	365.5	4,429.5	19,046
OTHER HELIUM CONCENTRATIONS NOT IN DESIGNATED GAS OR OIL FIELDS							
	84-13-6	Mississippian	0.20				
	87-9-6	Leduc Reef	0.28				
	77-25-5	Eaglesham-Rundle	0.32				
	75-19-5	Granite Wash	0.51				
	87-7-6	Leduc	0.54				
	87-8-6	Woodbend Reef	0.60				
	1-11-4	Jefferson	0.98				
	1-11-4	Beaverhill Lake	1.66				

Recovery is achieved from natural gases containing about two per cent helium. Helium-bearing natural gases in Alberta are found in both gas and oil fields. The helium content in recoverable gases is generally much higher for gas fields than for oil fields. Data on gases containing more than 0.2 per cent helium are given above. At present the helium is lost to the atmosphere when these gases are burned as fuel.



## IRON ORE

Most iron ore is made into pig iron and used as a raw material in crude steel production.

Various showings of iron-rich rocks have been reported from different parts of Alberta in the past 60 years, but only two of these deposits have proven to be of sufficient size to warrant detailed investigation.

Low-grade titaniferous magnetite deposits of sedimentary origin are present at widely scattered localities in the foothills, near the Crowsnest Pass. The deposits are thin lenses of banded magnetite-rich sandstones in the basal strata of the Late Cretaceous Belly River Formation, and have been complexly folded and faulted. The richest deposits grade between 25 and 30 per cent iron, with four to five per cent  $\text{TiO}_2$ , but are unsuitable for conventional beneficiation and smelting techniques because of their high chlorite and titanium content and fine grain sizes. Reserves are estimated at less than two million tons near Burmis in the Crowsnest Pass, and less than six million tons near Dungarvan Creek south of Pincher Creek.

Large deposits of low-grade sedimentary iron ore are present in the Peace River District. The deposits consist of thin but widespread oolitic sandstone bodies interbedded among flat-lying shales and sandstones of Late Cretaceous age. The iron-rich sandstones are comprised mainly of limonitic oolites in a fine-grained groundmass of siderite, chamosite, and clay, and grade between 35 and 40 per cent iron, with relatively high silica and low lime contents. The largest deposits outcrop north of the Peace River along the flanks of the Clear Hills, on Swift Creek and near Worsley. Estimates of reserves range between 250 million and one billion tons.

Ferruginous sandstone deposits equivalent in age to those in the Clear Hills also present south of the Peace River, between Spirit River and Gordondale, but no estimates of grade or reserves are available.

## LIGHTWEIGHT AGGREGATE

Lightweight aggregates are natural or manufactured products which may be used to make concrete with densities one-third or less than those made with sand, gravel and crushed rock. Natural materials include pumicite, tuffs, breccia and diatomite. Manufactured materials include expanded clay, shale, perlite, and vermiculite. Lightweight aggregate is used in the fabrication of insulating, structural and oil well concrete,



*The St. Mary's River Dam — a major irrigation project in southern Alberta.*



acoustical blocks, stucco and masonry units. Lightweight aggregate, when used in the manufacture of concrete, develops equal or greater strength than ordinary concrete, reduces the need for structural steel, reduces maintenance costs, makes concrete up to 60 per cent lighter in weight and is sound and fireproof.

The various lightweight aggregates are used mainly in commercial and institutional construction.

Although several deposits of pumicite are present in Alberta, none are as yet used for lightweight aggregate; deposits are too small, too far from transportation facilities, too far from markets or unsuitable.

Lightweight aggregate is being made from imported vermiculite and perlite in plants at Calgary and Edmonton.

Clays and shales suitable for the manufacture of lightweight aggregate are widespread in Alberta: the best are obtainable from Upper Cretaceous Belly River and Bearpaw Formations. Most outcrops are, however, too far from markets for large-scale quarrying at present. Furthermore, numerous sandstone beds in the Belly River Formation make quarrying difficult. Local clays and shales are expanded into lightweight aggregate in rotary kilns in Edmonton and Calgary.

#### LIMESTONE AND LIME

Limestone is carbonate rock. There are two basic types: high-calcium and high-magnesium. High-calcium limestones are preferred for most purposes. Limestone is used in the production of lime and cement, in road metal; as a filler in asphalt, paint and rubber; and as a flux in the smelting of ores.

Limestone is exposed in the Palaeozoic strata of the Rocky Mountains and along the margin of the Precambrian Shield. Data on some of the high-calcium beds near railways are shown in the accompanying table.

Limestone is a commodity of low unit value. Existence of transfer facilities and the distance from markets are important factors determining the feasibility of developing a deposit. Other considerations include chemical composition, texture, hardness and colour of the rock, as well as the thickness and extent of the beds.

Limestone is being quarried at Cardston, Cadomin, Cascade, Canmore, Exshaw, Kananaskis and Seebe.

Table 21 PUMICITE DEPOSITS IN ALBERTA

Locality	Thickness (feet)	Remarks
Irvine	5-10	Varies from pure pumicite to bentonitic; 100 feet above base of Bearpaw Formation on north and east sides of Cypress Hills extensive outcrops one mile south of Irvine.
Marten Mountain	1	Poorly exposed; at west end of mountain at east end of Lesser Slave Lake.
Calgary	1	In alluvial deposits a short distance above bedrock, just downstream from Glenmore Dam.
Willow Creek SE 36-13-2-5	1	Formerly mined; cream-colored to black; under two feet of overburden; 80 per cent passes a 200-mesh screen; recently reported thicknesses are considerably greater than one foot.
Asplund NE 27-69-22-5	1 1/2	Indurated, partly altered to bentonite.
20 miles north of Rocky Mountain House SE 26-42-8-5	unknown	Exposed on both sides of North Saskatchewan River.

Table 22

## HIGH-CALCIUM LIMESTONES IN ALBERTA

Locality	Thickness (feet)	CaCO <sub>3</sub> (per cent)	MgCO <sub>3</sub> (per cent)	Remarks
Blairmore, at base of Turtle Mountain	24	98.8	1.2	Strikes N 26° W, dips 65° SW, quarried for lime plant before 1909 and for a cement plant from 1909 to 1915; 24-foot layer separated from overlying 40-foot layers by 18 feet of cherty magnesian limestone.
	40	96.5	2.8	
	40	88.9	10.2	
Crowsnest Pass	150	96.3	2.0	East of cave opposite Crowsnest Lake; strikes N 55° W, dips 32° SW. Opposite east end of Island Lake; 100-foot layer separated from 150-foot layer by limestone con- glomerate or breccia.
	150	97.0	2.3	
	100	98.2	1.6	
Heart Mountain (south of Kananaskis)	250 -	94.9	2.7	In lower Rundle Formation; strikes N 30° W, dips 35° to 40° SW; minimum reserves estimated at 10 million tons; analyses are weighted averages.
	300			
Exshaw	22	97.3		In section east of Canada Cement Plant; strikes N 50° W, dips 30° SW; these layers are near top of measured section and are separated by 27 feet of section covered by overburden.
	92	96.2		
Nordegg	50	95 -	0.6 -	Layer about 100 feet above base of Rundle Formation along railway within one mile of Nordegg; dips 10° to 14° SW; reserves estimated at 8 million tons; two other nearby layers are thinner but have similar compositions; one was formerly quarried for railroad ballast.
		98	4.2	
Brule	200	91.6	6.3	Three miles SW of Brule at Ogre Canyon.
Fort McMurray	unknown	95.2	1.1	Grab sample from north bank Clearwater River at its confluence with Athabasca River;
	unknown	93.4	1.5	Grab sample from north bank Clearwater River, 23rd baseline, R. 5, 6, W4; both samples from Beaverhill Lake Formation.
Bruderheim	105	99	1	In Devonian Leduc Formation; average of 30 samples taken between 3,144 feet and 3,249 feet in a well.

Lime or quicklime is limestone calcined at high temperature. A secondary form is hydrated lime, made commercially by adding water. The manufacture of lime involves three principal processes: crushing, calcination and hydration. The purity of the product depends on the quality of the limestone and the method of processing.

Lime is relatively inexpensive and is widely employed in a number of industrial processes. Building use is as an ingredient in plaster, mortar, brick and stucco. Metallurgical uses include the control of acidity and alkalinity, neutralization of waste sludges and liquors, and in the fluxing of steel. Chemical uses of lime are as an acid-neutralizing agent, a flocculant, a flux (purifier), a causticizing agent, a lubricant, a bonding agent, a solvent, and for hydrolization and absorption. Lime is also used in the manufacture of fertilizers, in highway construction to stabilize sub-bases; in tanning, sugar refining, treating water, making insecticides and fungicides; in the manufacture of glass; and in dissolving fluids for pulp.

Lime plants at Raymond, Picture Butte, Taber, Kananaskis, and Crowsnest produce high-calcium lime; those at Kananaskis and Crowsnest produce the hydrated varieties as well. In 1966 over 73,000 tons of lime, valued at \$1,317,000, were produced.

## PHOSPHATE

Phosphate rock is a natural rock containing one or more phosphatic minerals, usually calcium phosphate. Phosphate is used chiefly in the manufacture of fertilizer. There are at present four plants in Alberta converting the natural rock into phosphoric acid which is combined with ammonia to make various ammonium phosphate fertilizers.

Phosphatic minerals are used in stock and poultry feed, food processing, metal treatment, pharmaceuticals, sugar refining, ceramics, smoke screens, in the manufacture of soap and detergents, chemical reagents and incendiary bombs.

Phosphate deposits are mined extensively in Florida and in the states of Idaho, Montana, Wyoming and Utah. The latter deposits extend northward into the Canadian Rockies. Deposits of phosphate rock are widespread from south of the Crowsnest Pass to north of Jasper. The phosphate, some as nodules or oolites, is present in beds and combined with shale, limestone, chert, and conglomerate, ranging from 0.1 feet to two feet thick. Although some of these beds appear to thicken and become richer toward the west, none of those known are thick enough, continuous enough, or rich enough to compete with the phosphate beds in the Phosphoria Formation in the United States, where the richest beds range from three to more than nine feet thick. The phosphate rock being used in Alberta is being imported from Utah, southeastern Idaho and Florida; 321,000 tons were brought into Alberta in 1965.

Given a continued and rapid growth in the market for phosphate fertilizers, there is always the possibility that further investigation may uncover deposits of economic value. This is especially true since phosphate is sometimes difficult to detect in the field.

## POTASH

The term "potash" applies to soluble rock materials containing potassium in extractable amounts. About 95 per cent of the potash produced is used as fertilizer. Potash, phosphorus and nitrogen are the basic ingredients in mixed chemical fertilizer.

Potash is found in three or more fairly continuous and consistent layers in the upper part of the vast platter-shaped Prairie Evaporites Formation, which underlies southern Saskatchewan and adjacent parts of Manitoba and Alberta.

Most commercial potash beds in this formation are confined to Saskatchewan, grading into salt beds towards the Alberta side of the basin. Some areas south and west of Lloydminster are being appraised.

## SALT

Common salt is crystallized sodium chloride. Salt is found either in solids as rock salt or in solutions as brines. Common salt has a wide range of uses; in the chemical industry for the manufacture of sodium hydroxide, chlorine and hydrochloric acid; in the tanning industry; for salting and curing meat and fish; in cattle and stock feed; in textile dyeing; in water softeners; in refrigeration; for ice and dust control on roads; in the pulp and paper industry for the production of the required large amounts of chlorine and caustic soda; and a small part (approximately three per cent) for domestic purposes.



Deposits of common salt underlie a considerable area of eastern Alberta. The salt beds dip southwesterly from 600 to 800 feet below the surface at Fort McMurray and 5,000 to 6,000 feet below the surface near Edmonton. The thickest salt deposits are in the Middle Devonian Elk Point Group; thinner deposits are in the Upper Devonian Stettler Formation near Stettler, and east of Drumheller. The salt beds are more than 1,300 feet thick about 30 miles west of Cold Lake and become thinner in all directions, being 700 feet thick at Lindbergh, between 400 to 500 feet at Duvernay, up to 200 feet at Fort McMurray and 165 feet just east of Edmonton. Individual salt beds range up to about 440 feet thick and are separated from each other by layers of limestone, dolomite, anhydrite, and gypsum. Thus, salt is readily available in Alberta for all foreseeable needs.

Salt plants at Duvernay and Lindbergh produced 116,000 tons of salt valued at \$1.6 million in 1966. At Lindbergh salt for domestic and industrial consumption is obtained from salt beds 3,600 feet below the surface. At Duvernay, brine from salt beds 3,600 feet below the surface is used to make caustic soda, chlorine, and hydrochloric acid.

#### SAND AND GRAVEL

Sand and gravel are unconsolidated materials derived from the natural disintegration and abrasion of rocks. They normally appear together but in a wide variety of sizes and types. Major uses are as aggregate in concrete, mortar, plaster, and in asphalt paving material and road surfacing. For general concrete construction or asphalt purposes the sand should be a fairly coarse product; for sub-basing roads an even coarser grade is used; for plaster and mortar a fine grade is required; a finer sand is used sometimes to cover fresh asphalt and oil sprayed roads, presumably because such sand has more surface to absorb the oil. Pea gravel separated from other sizes by screening is used on roofs; and crushed chips are used for winter traction at airports.

Economic deposits of sand and gravel are common in parts of the plains of Alberta, but are most plentiful in the foothills and mountains.

Geologically, sand and gravel deposits on the plains of Alberta can be divided into three groups according to age: preglacial, glacial, and recent. Preglacial gravel deposits are composed mainly of rounded quartzite pebbles derived from the Rocky Mountains. They cap bedrock topographic highs such as the Cypress, Hand, Swan, and Clear Hills, and some other small bedrock knobs, and form deposits in preglacial bedrock channels. Generally, these sand and gravel deposits are of a good grade but comprise only a small fraction of the total production because of their small number and the depth of overburden. Edmonton is supplied largely by this type of gravel.

The last continental glacier, which covered almost all of Canada and large parts of the United States, disappeared from Alberta about 10,000 years ago. The meltwaters of the wasting glacier were loaded with debris from the bedrocks over which the glacier passed. This debris consisted mostly of Cretaceous clays and sands, with only small amounts of gravelly materials carried from the Canadian Shield several hundred miles to the north. Economic gravel deposits were, therefore, left only where very large amounts of glacial meltwater washed out the fine material and concentrated the gravel along the limited number of large glacial drainage ways. The Canadian National Railways'

pit at Kinsella, the pit at Little Fish Lake near Drumheller, and those supplying Calgary are in glacial gravels.

Recent sands and gravels are found along present rivers, such as the North Saskatchewan, Red Deer, and Bow. Gravel from these deposits, although poor in quality, is used in the absence of better materials.

Alberta production of sand and gravel in 1966 was 13.6 million tons valued at \$12.5 million.

#### SILICA SAND

Silica or quartz sand implies a sand whose chemical composition is primarily quartz, with few impurities. Most commercial sand is high in silica and low in iron.

Silica sand is used in the manufacture of glass and glass fibre, in foundries for moulding purposes, in some asphalt roofing products, and in high quality sand blasting. Special grades of silica sand are also used by oil servicing companies in the hydraulic fracturing of oil formations. Currently in Alberta, the glass manufacturing industry is the major user, and its requirements are exacting.

In 1965 over 42,500 tons of silica sand valued at \$508,000 were used in manufacturing industries. An additional 4,500 tons were used in oil well fracturing operations. Most of the industrial silica sands are imported. The largest portion of the imported sand comes from Ottawa, Illinois, and Le Sueur, Minnesota. Sand used in oil well fracturing is imported from Brady, Texas.

A number of deposits of high grade silica sand have been discovered in Alberta. However, very few of the deposits are ideally situated with respect to transportation and often the distance to markets makes their development uneconomic at present. Deposits in the Peace River area lie in the upper 40 to 60 feet of the Peace River Formation. They are clean, fine-to-coarse grained quartz, of good purity and capable of being upgraded to glass-sand specifications. The Pipestone River deposit, 22 miles north of the Lake Louise Station, lies within Banff National Park and cannot at present be commercially exploited. Silica sand from the Bruderheim deposit is used in the manufacture of glass fibre. This sand, of glacial origin, is also the main constituent in moulding sand used in several Edmonton foundries, but it must be beneficiated before it is suitable for these industrial users.

The sand left after extracting oil from the Athabasca Oil Sands consists essentially of quartz with mica as the chief impurity and should be a clean, high quality sand of commercial grade, providing that the thin film of oil left on the sand can be removed. Based on the analysis of samples taken near Bitumont and McMurray, it is felt that even after beneficiation, the final product would be too fine grained for glass manufacture. There are probably areas along the Athabasca River where sand of larger grain size and of the quality desired for glass manufacturing exists.

In the past, Alberta deposits have not received much attention because of high beneficiation costs, restrictions on mining in parks, and because top-quality, low cost sand has been readily available from suppliers in the United States.

## SODIUM SULPHATE

Sodium sulphate comes on the market in three forms: salt cake, the relatively crude form containing up to three per cent impurities; anhydrous sodium sulphate, a refined form containing less than 0.3 per cent impurities; and Glauber's salt, the decahydrate containing 55.9 per cent water of crystallization.

Natural sodium sulphate collects as crystal beds and covering brines in closed drainage basins in western Canada. Competing with natural sodium sulphate is by-product sodium sulphate from a number of industrial operations.

Sodium sulphate is used chiefly in the kraft pulp industry. It is used to a lesser extent in the manufacture of glass, synthetic detergents, various sodium salts in the chemical industry, pharmaceuticals, fertilizers, in dyeing, tanning, and uranium processing.

Presently, natural sodium sulphate is being produced in Saskatchewan, from alkali lakes similar to those in Alberta. Productive capacity, now of the order of 400,000 tons annually, is expanding to 700,000 tons in line with rising demands and because by-product sodium sulphate is becoming less abundant.

In Alberta, investigation of potential sodium sulphate deposits is underway. The Metiskow, deposit contains an estimated 1.8 million tons of  $\text{Na}_2\text{SO}_4$ , slightly less than some deposits being worked in Saskatchewan.

Table 23 SODIUM SULPHATE  
DEPOSITS IN ALBERTA

Deposit	Area (acres)	Depth of brine (feet)	$\text{Na}_2\text{SO}_4$ in brine (per cent)
Metiskow	640	1	10
Kinsella	153	4-6	4
Kinsella	96	2-3	11
Kinsella	200	4-5	5
Cairns	500	1-2	9
Cairns	350	1-2	12

## SULPHUR

Sulphur is a pale yellow non-metallic element occurring in crystalline and amorphous modifications.

Sulphur can be derived from iron pyrites and other sulphide ores as a by-product of smelter gases, from natural gas, and from bedded elemental sulphur deposits such as those along the Gulf Coast.

Sulphur is rather plentiful in the earth's crust, however, only under special circumstances can it be commercially produced. Alberta elemental sulphur is produced from hydrogen sulphide which is removed in the process of making sour natural gas suitable for marketing. As a co-product of natural gas extraction, sulphur is relatively inexpensive f.o.b., but producers must consider substantial transportation costs.

Alberta sour gas fields, and annual production figures of each, are as shown. Production of sulphur from these fields in 1966 was valued at \$33.5 million — 93.4 per cent of the Canadian total.



Table 24 SULPHUR PRODUCTION IN ALBERTA, 1962 - 1966

<u>Gas Field and Operator</u>	1962	1963	1964	1965	1966
			-- (long tons) --		
Carstairs					
Home Oil Co. Ltd.	5,663	7,694	9,512	9,470	9,187
Crossfield					
Petrogas Processors Ltd.	170,216	231,889	257,524	242,627	229,213
Edson					
Hudson's Bay Oil & Gas Co. Ltd.	-	-	-	2,089	31,575
Harmattan					
Canadian Superior Oil Co.	-	-	-	-	27,033
Homeglen Rimbey					
British American Oil Co. Ltd.	63,952	71,621	83,148	87,655	85,934
Innisfail					
Shell Canada Ltd.	33,704	32,302	32,351	21,718	21,971
Jumping Pound					
Shell Canada Ltd.	28,325	29,225	31,544	32,715	33,797
Nevis					
British American Oil Co. Ltd.	18,520	20,709	21,905	21,821	20,291
Chevron Standard Ltd.	37,279	42,929	45,430	46,453	43,622
Okotoks					
Texas Gulf Sulphur Co.	119,937	123,925	131,052	139,833	134,215
Olds					
Amerada Petroleum Corporation	-	-	3,540	42,028	54,487
Pincher Creek					
British American Oil Co. Ltd.	173,152	170,079	125,139	99,001	82,076
Redwater					
Imperial Oil Ltd.	2,240	2,086	1,833	1,633	1,842
Savanna Creek					
Jefferson Lake Petrochemical	28,309	89,748	36,133	26,397	25,822
Turner Valley					
Royalite Oil Co. Ltd.	7,837	8,402	7,831	4,892	3,640
Waterton					
Shell Canada Ltd.	134,300	206,498	378,040	369,576	402,720
Wildcat Hills					
Canadian Fina Oil Ltd.	21,696	21,093	22,669	26,673	26,469
Wimborne					
Socony Mobil of Canada Ltd.	-	-	-	54,747	82,609
Windfall					
Pan American Petroleum Corp.	127,221	219,467	226,587	309,100	359,717
	972,351	1,227,667	1,414,238	1,538,428	1,676,220

The continued heavy demand for sulphur, estimated to be increasing six per cent annually, at attractive prices due to tightening world supply and depletion of stock-piles, has acted as a strong stimulus for the expansion of existing facilities and the construction of new plants in Alberta.

# CANADA'S NORTH

Canada's northland is a region — vast, rich in mineral resources, timber, and potential power sites. Comprising both the Yukon and the Northwest Territories, about 1.5 million square miles or nearly 40 per cent of the area of Canada, it contains less than half of one per cent of the Canadian population.

The economies of the Yukon and Northwest Territories are based on their minerals. Historically, gold and silver accounted for about 80 per cent of the value of minerals produced. Production patterns have altered dramatically in the last several years, with the opening of the Pine Point lead-zinc mines. Total value of mineral production in the territories was \$124 million in 1966: of this gold and silver accounted for 21 per cent and lead-zinc for 75 per cent.

The developments at Pine Point have greatly stimulated prospecting and exploration activity throughout the Northwest Territories. In the Yukon Territories huge lead-zinc ore discoveries in the Ross River area are being drilled and defined; asbestos deposits at Clinton Creek and copper deposits at Whitehorse are close to production. It is expected that asbestos to the value of more than \$7 million annually and copper concentrates valued at approximately \$5 million per year will be produced.

Most of the favourable mineral-bearing lands of the Northwest Territories are unprospected but there is every reason to believe that they will be as rich in mineral wealth as those of similar geological age in the southern part of the Canadian Shield. However, economic factors will regulate the rate of the development of resources. As long as cheaper and more accessible minerals are available elsewhere, the capital invested in northern mining is likely to remain relatively modest.

Productive forested area in the Yukon and the Mackenzie River Valley totals about 75,000 square miles, and forestry operations form a small but important part of the economies of both regions.

The potential hydro-power resources, particularly those of the Yukon, are considerable. However, hydro-electric development is not yet extensive.

Local production of agricultural products has been severely limited by soil and climatic conditions. At present, small-scale agricultural operations, to serve the immediate needs of local markets, are carried on in the more favourable areas of the Yukon and along the Mackenzie River. There is little prospect of thriving agricultural-based communities.

Through the development and utilization of various modes of transportation Alberta is closely linked with the Yukon and Mackenzie River Valley developments. Air, road, rail and water routes funnel out of Alberta. Tele-communication networks parallel transportation routes: the recently installed microwave communication system, which has become such a boon, links the north with all points on the continent.

The Alaska Highway, passing through northeastern British Columbia, and the Yukon, is linked transcontinentally through the Alberta road network. The Mackenzie Highway from Peace River - Grimshaw to Hay River was built to provide bulk freight access to northern settlements. It now supplements the recently completed Great Slave Lake Railway, built to carry Pine Point ores to the smelters in the south. On the east the Northern Alberta Railway links Edmonton with the water transportation system extending to the Arctic Ocean.

Edmonton is the major supply centre for the mining communities of the North.

As a move to speed development, the federal government, in 1967, selected Yellowknife as the capital of the Northwest Territories. Moving the seat of government from Ottawa is an important step toward self-government for the region.

New methods of prospecting for minerals, coupled with continuing technological improvements in transportation, so vital to development, continue to brighten the future for Canada's northland. Pipelining, large scale air transport, and such naval developments as submarine transports, all hasten the day when the mineral wealth will be tapped, developing this region and strengthening its economy.

Table 25

MINERAL PRODUCTION IN THE NORTHWEST TERRITORIES  
FOR SPECIFIED YEARS

1947 - 1966

		1947	1951	1955	1959	1961	1963	1965	1966
Gold	Fine Oz.	62,517	212,211	321,321	405,922	407,474	400,885	452,479	424,029
	\$	2,188,095	7,819,975	11,092,001	13,626,802	14,449,028	15,133,409	17,071,580	15,990,133
Silver	Fine Oz.	45,355	64,228	58,477	70,560	77,890	81,206	1,064,824	1,662,192
	\$	32,655	60,728	51,565	61,937	73,419	112,389	1,490,754	2,325,407
Uranium	Lb.	-	-	-	919,333	-	-	-	-
	\$	-	-	-	8,155,729	-	-	-	-
Copper	Lb.	-	1,934	-	986,682	926,480	32,638	942,400	1,496,805
	\$	-	536	-	292,157	270,440	10,281	354,342	672,065
Lead	Lb.	-	-	-	-	-	-	165,662,547	210,659,720
	\$	-	-	-	-	-	-	25,677,695	31,472,562
Nickel	Lb.	-	-	-	3,841,770	3,409,410	-	-	-
	\$	-	-	-	2,689,239	2,604,789	-	-	-
Petroleum	Bbls.	227,474	227,449	404,219	430,319	516,979	631,229	644,998	752,585
	\$	500,238	399,887	1,185,780	1,025,914	730,160	633,754	614,941	842,895
Natural Gas	M. Cu. Ft.	-	19,333	18,670	67,189	41,678	51,478	43,068	46,238
	\$	-	7,621	6,213	22,718	17,326	21,330	18,088	19,400
Tungsten	Lb.	-	-	-	-	-	-	3,736,324	-
	\$	-	-	-	-	-	-	3,115,909	-
Zinc	Lb.	-	-	-	-	-	-	189,380,626	378,333,400
	\$	-	-	-	-	-	-	28,596,474	57,128,344
Cadmium	Lb.	-	-	-	-	-	-	185,840	1,073,400
	\$	-	-	-	-	-	-	516,635	2,769,372
Other	\$	-	-	13,262,262*	-	-	-	-	-
TOTAL VALUE	\$	2,720,988	8,288,747	25,597,821	25,874,496	18,145,162	15,911,163	77,456,418	111,220,178

\* Includes Pitchblendes at \$13,232,079

Table 26

MINERAL PRODUCTION IN THE YUKON TERRITORY  
FOR SPECIFIED YEARS

1947 - 1966

		1947	1951	1955	1959	1961	1963	1965	1966
Cadmium	Lb.	-	66,452	211,808	141,750	142,685	135,885	138,918	118,735
	\$	-	178,091	360,074	181,440	228,296	326,124	386,192	306,336
Coal	Tons	-	3,696	7,040	3,879	7,703	8,231	8,801	5,670
	\$	-	60,597	81,806	58,200	114,221	123,675	85,626	46,390
Copper	Lb.	-	-	-	-	880,773	-	-	-
	\$	-	-	-	-	257,098	-	-	-
Gold	Fine Oz.	47,745	77,504	72,201	66,960	66,878	55,211	45,031	43,466
	\$	1,671,075	2,856,022	2,492,379	2,247,847	2,371,494	2,084,215	1,698,975	1,639,103
Lead	Lb.	1,145,256	12,533,071	26,248,786	21,592,456	16,769,815	16,978,607	17,851,309	15,975,125
	\$	156,556	2,306,085	3,774,575	2,290,960	1,712,198	1,867,647	2,766,953	2,386,684
Silver	Fine Oz.	372,051	3,442,788	5,712,219	7,054,632	6,937,086	6,106,037	4,615,995	4,194,580
	\$	267,877	3,255,156	5,037,035	6,192,556	6,538,897	8,450,755	6,462,393	5,868,217
Zinc	Lb.	-	5,678,999	21,823,307	13,246,532	12,137,418	11,850,706	13,247,653	11,450,510
	\$	-	1,130,121	2,978,881	1,621,375	1,528,100	1,514,520	2,000,396	1,729,027
Other	\$	-	7,098	-	-	-	-	-	-
TOTAL VALUE	\$	2,095,508	9,793,170	14,724,750	12,592,378	12,750,304	14,366,936	13,400,535	11,975,757



# ENERGY RESOURCES

The major share of Canada's fossil fuel resources of coal, petroleum, natural gas and natural gas liquids are in Alberta. The famed Athabasca Oil Sand deposits of the north-central region hold an enormous reserve of oil which can be upgraded to produce a high quality synthetic crude oil. Nearly one-half of Canada's recoverable coal reserves are within the province.

The reserves of major fossil fuels in Alberta and Canada, and the Alberta percentage of the Canadian total are expressed in the following table:

Table 27 FOSSIL FUEL ENERGY RESOURCES, ALBERTA AND CANADA

	Alberta (B. T. U. 's)	Canada* (B. T. U. 's)	Alberta's Percentage of Total Canada*
Natural Gas	35 x 10 <sup>15</sup>	43 x 10 <sup>15</sup>	81
Natural Gas Liquids	8.4 x 10 <sup>15</sup>	8.8 x 10 <sup>15</sup>	96
Crude Oil	42 x 10 <sup>15</sup>	48 x 10 <sup>15</sup>	89
Oil Sands (Raw Oil)	2500 x 10 <sup>15</sup>	2500 x 10 <sup>15</sup>	100
Coal	80 x 10 <sup>15</sup>	200 x 10 <sup>15</sup>	40

\* Excluding Yukon and Northwest Territories.

Natural gas is a principal fuel for domestic and industrial use in Alberta as well as being a substantial export commodity. In 1966 Alberta's production was 1.15 trillion cubic feet, 80 per cent of Canada's total.

Natural gas liquids, in addition to serving as hydrocarbon raw materials for Alberta's petrochemical industry, are a source of heating fuel for farm homes and of motive fuel. In 1966, production of propane was over 11 million barrels, of butanes was over 7 million barrels, and of pentanes plus was nearly 231 million barrels.

Crude oil production in Alberta has risen dramatically from 29,000 barrels per day in 1948 to 555,000 barrels per day and presently comprises 63 per cent of Canadian production. Canadian exports of crude oil and equivalent in 1966 were 127 million barrels, (a daily average of 348,000 barrels) as against imports of 159 million barrels.

Tapping the vast reserves of the Athabasca oil sands commenced in 1967 at the 45,000 barrel per day plant of Great Canadian Oil Sands Limited. Many other companies have taken up leases in the area and some are actively seeking permits for development.

Coal production declined drastically during the 1950's. In recent years production of coal for export and as a fuel for power generation has been increasing steadily.

By late 1967 the net kilowatt rating of major thermal plants was 1,226,200 kilowatts of which 608,500 kilowatts, or nearly one-half, were coal fired. The latest addition was a 300,000 kilowatt coal burning unit brought into operation at the Wabamun steam plant.

Water power contributes a substantial portion of Alberta's energy requirements. The table shows the relative percentages of capacity and generation by different energy sources during 1966.

Energy Source	Percentage of Capacity %	Percentage of Power Generated %
Water Power	41.4	25.0
Steam and Gas Turbine	54.6	72.3
Internal Combustion	4.0	2.7
	<hr/> 100.0	<hr/> 100.0

Alberta's hydroplants have a capacity of 665,000 net kilowatts of which 325,000 are derived from eleven stations in the Bow River system and 340,000 kilowatts are generated by the Brazeau installations.



*The petroleum industry is a major contributor to Alberta's basic economy.*

## ELECTRIC POWER

Energy-wise, Alberta is the richest province in Canada. Since a prime requirement of any industrial area is a cheap and plentiful supply of electric power, Alberta with its super-abundance of several forms of fuel is in a most fortunate position.

The proven oil and gas reserves of the province are large enough to serve all of Canada's immediate needs, with a substantial surplus for export. The province's coal fields contain some 50 billion tons of mineable coal -- more than one-half of all the mineable coal in Canada.

Surveys of the province's rivers indicate that, in addition to the some 665,000 KW of hydro power developed, they could yield well over two million additional KW. There are four additional sites in the Bow River basin estimated at a total of 260,000 KW which can be developed when needed. In addition to this, studies have been made of sites on the North Saskatchewan River which have an estimated potential of over 200,000 KW. Studies of the Brazeau River, which lends itself to development for peak load purposes, indicate the possibility of installing several peak load units. The Peace River has one or two excellent hydro sites, although one or more of five sites on the Athabasca River, which have a total capability of over 1,200,000 KW, will probably be built first.

With all these energy resources which can be converted into very low cost power, more and more industries are bound to be established in the province.

As at 1966, Alberta was the fifth largest producer of power in Canada. Alberta's steam, hydro and internal combustion power plants had a total capacity of 1,609,000 KW, generating 5.7 billion KWH of electricity for 431,000 customers, including some 66,000 farms.

While at the moment slightly over one-half of the generating capacity in Alberta's thermal plants is using natural gas for fuel, a rapid shift toward coal-fired generation is underway. The largest thermal plant, that of Calgary Power Ltd. at Wabamun, is at present operating one 70,000 KW unit on natural gas and two units of a total capacity of 215,000 KW on coal. A fourth unit fired with coal, and rated at 300,000 KW came on line in 1967. The company is building another coal-fired plant in the vicinity of Wabamun which will go into operation during 1971. In many other areas of the province there are large seams of coal which can be strip-mined readily. The large steam stations of the near future will be near such seams.

Alberta's major hydro-electric installations are on the Bow River and its tributaries, with one other plant on the Brazeau River. These plants, owned by Calgary Power Ltd., have a capacity of 665,000 KW and feed into the provincial transmission grid. Because of the extremely low cost of power generated from strip-mined coal, hydroplants in the province are assuming the role of carrying the peak load, while thermal plants carry the base load. This combination of steam and hydro plants makes for optimum efficiency.



Taking into account the province's ordinary growth, the installed capacity of power plants is expected to be 2.6 million KW by 1971. From studies made by the Alberta Power Commission, it is expected that the additional capacity will come from thermal plants, mainly coal-fired. After 1971, some additional hydro power units undoubtedly will be installed; certainly on the Brazeau River and probably on the North Saskatchewan as well.

An interconnected system of power plants and transmission lines joins all the major points in the province, from Medicine Hat in the south east to the Rainbow Lake oilfield in the north west. In 1966, this system had a combined capacity of 1.6 million KW, generated 5.7 billion KWH and served 427,767 customers. Isolated plants serve Fort McMurray, Jasper and a few rather remote spots in the northern half of the province.

With over 66,000 farms now receiving central station service, the construction of farm lines in the province is nearly finished. During 1966, the average consumption per farm in Alberta was 6,477 KWH.

The following companies or municipalities generate or retail power to their customers:

#### Companies or Municipalities Generating and Retailing Power to Customers

Name of Company	Head Office	Address
Calgary Power Ltd.....	140 - 1st Avenue W.,	Calgary
Canadian Utilities Limited .....	Milner Building,	Edmonton
Northland Utilities Limited .....	Milner Building,	Edmonton
City of Edmonton .....	City Hall,	Edmonton
City of Lethbridge .....	City Hall,	Lethbridge
City of Medicine Hat .....	City Hall,	Medicine Hat

#### Towns and Cities Purchasing and Retailing Power to Residents

City of Calgary .....	City Hall,	Calgary
City of Red Deer .....	City Hall,	Red Deer
Town of Fort Macleod .....	City Hall,	Fort Macleod
Town of Ponoka .....	City Hall,	Ponoka
Town of Cardston .....	City Hall,	Cardston

All other towns and villages, and the majority of the hamlets in the province are served at retail by one or other of the various power companies.

In 1965, according to the Dominion Bureau of Statistics, the unit cost for domestic and farm consumers was 1.92¢ per KWH which gave Alberta the fifth lowest cost in Canada. Alberta commercial and industrial rates rank similarly with other areas of Canada. Rates for large industries using 1,000 H. P. and up are among the cheapest in Canada.



Table 28

PLANT CAPACITY, PEAK LOAD AND NET KWH GENERATED  
CENTRAL ELECTRIC STATIONS, ALBERTA - 1966

	Plant Capacity Dec. 31, 1966 Net KW	Peak Load (KW) on plants during 1966	KWH Generated Net - 1966 (thousands)
PRIVATELY OWNED			
Calgary Power Ltd. ....	948,000	712,600	3,480,207
Canadian Utilities Ltd. ....	169,750	164,544	578,281
Northland Utilities Ltd. ....	18,005	16,570	39,197
East Kootenay Power Co. (1) ....	10,000	10,000	10,713
Total .....	1,145,755		4,108,398
PUBLICLY OWNED			
City of Edmonton .....	392,000	306,000	1,209,000 (2)
City of Lethbridge .....	30,700	25,400	115,671
City of Medicine Hat .....	40,500	39,800	255,703 (3)
Total .....	463,200		1,580,374
GRAND TOTAL .....	1,608,955		5,688,772

Table 29

PLANT CAPACITY, PEAK LOAD AND KWH GENERATED, BY SOURCE OF POWER  
CENTRAL ELECTRIC STATIONS, ALBERTA - 1966

	Plant Capacity Dec. 31, 1966 Net KW	Peak Load (KW) on plants during 1966	KWH Generated Net - 1966 (thousands)
HYDRO			
Calgary Power Ltd. ....	665,000	459,900	1,418,855
Northland Utilities Ltd. ....	1,400	900	6,173
Total .....	666,400		1,425,028
STEAM			
Calgary Power Ltd. ....	283,000	283,800	2,061,260
Canadian Utilities Ltd. (4) ....	122,500	120,200	458,323
East Kootenay Power Co. (1) ....	10,000	10,000	10,713
City of Edmonton (4) ....	392,000	306,000	1,209,000 (2)
City of Lethbridge (4) ....	30,700	25,400	115,671
City of Medicine Hat .....	40,500	39,800	255,703 (3)
Total .....	878,700		4,110,670
INTERNAL COMBUSTION			
Calgary Power Ltd. ....	-	-	92
Canadian Utilities Ltd. (4) ....	47,250	44,344	119,958
Northland Utilities Ltd. ....	16,605	16,570	33,024
Total .....	63,855		153,074
GRAND TOTAL .....	1,608,955		5,688,772

Table 30

RELATIVE POSITIONS OF STEAM, HYDRO AND INTERNAL COMBUSTION SOURCES OF POWER  
CENTRAL ELECTRIC STATIONS - ALBERTA, 1966

Method of Generation	Percent of Capacity	Percent of Power Generated
Hydro .....	41.4	25.0
Steam and Gas Turbine .....	54.6	72.3
Internal Combustion .....	4.0	2.7
	100.0	100.0
Publicly Owned .....	28.8	27.8
Privately Owned .....	71.2	72.2
	100.0	100.0

- (1) The East Kootenay power plant is at Sentinel some two or three miles inside the Alberta border. While this energy is generated in Alberta, most of it is exported to British Columbia.
- (2) Includes 61,901,500 KWH sold to Calgary Power Ltd.
- (3) Includes 115,069,000 KWH sold to Calgary Power Ltd.
- (4) Includes Gas Turbines.



Table 31

DISPOSAL OF ELECTRIC ENERGY, BY TYPE OF CONSUMER, ALBERTA  
1948 - 1965

Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$	Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$
FARM SERVICE:						POWER EXCLUDING DELIVERIES TO ELECTRIC BOILERS:					
1948	3,393	6,389,000	326,801	96.32	.051	1956	16,426	1,022,309,000	12,916,000	786.31	.013
1950	7,866	17,698,835	598,608	76.10	.034	1958	19,568	1,224,536,000	16,044,000	819.91	.013
1952	13,818	37,960,000	1,024,527	74.14	.027	1960	20,739	1,446,691,000	19,528,000	941.61	.013
1954	24,688	73,016,000	1,763,112	71.42	.024	1962	18,355	1,580,804,000	20,200,000	1,100.52	.013
1956	35,005	113,951,000	2,605,000	74.42	.023	1963	18,779	1,704,989,000	21,691,000	1,155.07	.013
1958	40,847	145,641,000	3,275,000	80.18	.022	1964	16,689	2,313,574,000	21,659,000	1,297.80	.009
1960	49,757	200,490,000	4,412,000	88.67	.022	1965	12,297	2,603,056,000	23,523,000	1,912.91	.009
1962	54,689	262,706,000	5,643,000	103.18	.021	OTHER USES (Included in Power):					
1963	57,034	279,796,000	5,610,000	98.36	.020	1963	63,745,000		434,000		
1964	58,604	314,719,000	6,139,000	104.75	.020	1964	13,650,000				
1965	60,064	363,475,000	6,827,000	113.66	.019	1965	4,421,000				
DOMESTIC SERVICE:						STREET LIGHTING ONLY:					
1948	105,324	101,159,000	3,672,869	34.87	.036	1948	280	12,308,000	330,742	1,181.22	.027
1950	126,266	146,506,165	4,786,169	37.91	.033	1950	315	13,830,000	402,262	1,277.02	.029
1952	144,541	195,276,000	6,109,507	42.27	.031	1952	379	16,811,000	474,026	1,250.73	.028
1954	165,990	282,627,000	8,000,898	48.20	.028	1954	404	18,476,000	643,455	1,592.71	.035
1956	187,217	387,309,000	9,968,000	53.24	.026	1956	480	25,585,000	742,000	1,545.83	.029
1958	214,317	500,407,000	12,209,000	56.97	.024	1958	527	38,393,000	1,251,000	2,373.81	.033
1960	240,383	666,829,000	14,868,000	61.85	.022	1960	562	53,733,000	1,434,000	2,551.60	.027
1962	261,052	816,240,000	17,583,000	67.35	.022	1962	616	71,700,000	1,869,000	3,034.09	.026
1963	270,924	899,099,000	18,574,000	68.56	.021	1963	639	80,952,000	2,101,000	3,287.95	.026
1964	281,113	980,607,000	19,593,000	69.70	.020	1964	637	93,494,000	2,465,000	3,869.70	.026
1965	290,293	1,105,488,000	21,377,000	73.64	.019	1965	637	101,643,000	2,662,000	4,178.96	.026
COMMERCIAL LIGHT:						FREE SERVICES					
1948	24,339	90,206,000	3,403,085	139.82	.038	KW Hrs.					
1950	27,530	120,235,000	4,506,545	163.70	.037	LOSSES					
1952	29,478	154,751,000	5,692,184	193.10	.037	KW Hrs.					
1954	33,946	189,067,000	6,937,611	204.37	.037	1948	3,531,000		103,063,000		
1956	37,254	245,244,000	8,660,000	232.46	.035	1950	4,214,000		108,259,000		
1958	40,847	299,204,000	10,360,000	253.63	.035	1952	5,803,000		153,503,000		
1960	44,266	380,560,000	12,403,000	280.19	.033	1954	2,292,000		196,967,000		
1962	49,400	607,735,000	17,078,000	345.71	.028	1956	*		255,191,000		
1963	49,054	666,452,000	17,937,000	365.66	.027	1958	*		290,792,000		
1964	51,332	769,603,000	20,076,000	391.10	.026	1960	*		423,741,000		
1965	56,516	860,255,000	20,915,000	370.07	.024	1962	*		461,424,000		
SMALL POWER (Under 50 KW): **						1963	*		545,708,000		
1948	7,656	46,911,000	1,326,013	173.20	.028	1964	*		577,723,000		
1950	8,918	66,184,000	1,767,919	198.24	.027	1965	*		569,121,000		
1952	9,564	80,442,000	2,211,737	231.26	.027						
1954	10,796	124,721,000	3,286,828	304.45	.026						

## TOTAL ENERGY DISPOSED

Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$
1948	141,876	729,139,000	12,136,697	85.54	.017
1950	171,998	885,720,000	15,524,403	90.26	.018
1952	200,259	1,171,507,000	20,619,957	102.97	.018
1954	239,126	1,514,455,000	27,051,792	113.13	.018
1956	276,382	2,049,589,000	34,901,000	126.28	.017
1958	318,106	2,498,973,000	43,139,000	136.47	.017
1960	355,707	3,172,044,000	52,645,000	148.00	.017
1962	384,112	3,800,609,000	62,373,000	162.38	.016
1963	396,430	4,176,996,000	65,913,000	166.27	.016
1964	408,375	5,049,720,000	69,932,000	171.24	.014
1965	419,807	5,603,038,000	75,304,000	179.38	.013

\* Included in "Losses"

\*\* Included under the heading "Power Excluding Deliveries To Electric Boilers in 1956"

# COAL

Coal seams in Alberta generally are confined to formations of the Cretaceous period, and in a few areas of the province, to those of the Jurassic-Cretaceous and Cretaceous-Tertiary periods. Coal formations occur in three different horizons. The oldest horizon, the Blairmore-Kootenay formation, is Lower Cretaceous in age. The two younger horizons are of Upper Cretaceous age and occur in the Belly River and Edmonton formation. The oldest and most mature seams in the Blairmore-Kootenay horizons outcrop in the east ranges of the Rocky Mountains at such places as Canmore, Nordegg, Crowsnest Pass, and Mountain Park. Coal seams in the Belly River and Edmonton horizons outcrop in, or occur under, the foothills and plains.

Two chief factors that determine rank of coal are age and pressure. In general, the older coals are more mature or "harder" than the younger coals. The older Blairmore-Kootenay coals are more mature than most of the Belly River or Edmonton coals. Pressure also matures or hardens coal. Because of the intense compressive forces exerted during the uplift of the Rocky Mountains, the Belly River coal in the foothills is more mature than the Belly River coal at Wainwright. As a rule, deposits of coals of equal rank are to be found at roughly equal distances from the eastern edges of the Rocky Mountains.

The coal seams under the plains are horizontal or slope at less than five degrees. In the foothills area, the slopes may be as high as 20 degrees, while in the mountains, slopes as great as 90 degrees occur.

Coal of the sub-bituminous type underlies much of the province's plains, while bituminous coal (including coking coal) is found in the Rocky Mountain and Foothills regions. Anthracitic coal deposits are found in the Highwood coal area, west of Calgary.

"Total reserves" include all known coal deposits. A large percentage of the coal occurs in seams that are not included in the definition of "mineable" reserves. The term "mineable" is defined to mean bituminous coal occurring in seams three feet or more in thickness and covered by less than 1,000 feet of overburden. Latest available estimates place Alberta's "mineable" reserves of coal at about 48 billion tons, or roughly 48 per cent of Canada's total. "Recoverable" reserves have arbitrarily been placed at 50 per cent of the "mineable" reserves. The "recoverable" estimate is based on present mining methods and the economics of extraction of coal.

Production increased from a low of 2.1 million tons in 1962 to 3.5 million tons in 1966.

During the five-year period, 1962-1966, coal mined per man employed rose from 1,629 to 3,026 tons. The main contributing factor to this increased efficiency is the expansion of highly mechanized strip-mining operations.

A trend to large scale operations is evident. The number of mines in operation has decreased from 55 to 37 during the period, and the number of people employed has

declined from 1,281 to 1,146. In 1962, 70 per cent of the output was produced by 7 mines, whereas, in 1966, 3 mines produced about 70 per cent of the total output.

The coal industry in Alberta received a serious setback during the early 1950's with the loss of the railway-locomotive market to diesel fuel. Cheap natural gas and fuel oils also have replaced coal for space heating. Subsequently, though, a new market developed when thermal plants for electricity generation were built at Wabamun and Forestburg to use strip-mined coal as the source of energy.

In 1967, a fifteen-year contract was negotiated with Japan to supply over 13 million tons of coking coal from the Crowsnest Pass mines.

The Alberta Resources Railway was constructed during the 1965-1967 period to provide transportation of coking coal from a deposit near the junction of the Smoky River and Sheep Creek.

Table 32 PRODUCTION AND DISPOSITION OF COAL - ALBERTA, 1947, 1957, 1962 AND 1966

		1947	1957	1962	1966
TOTAL TONNAGE .....	Tons	8,074,596	3,155,354	2,087,310	3,467,254
TOTAL VALUATION .....	\$	36,317,343	17,287,229	9,983,327	12,067,044
NUMBER OF MINES IN OPERATION .....	No.	191	93	55	37
AVERAGE NUMBER OF MEN EMPLOYED ..	No.	8,761	2,795	1,281	1,146
DISPOSITION OF COAL					
Railways .....	Tons	2,504,604	152,693	32,003	6,631
Alberta .....	Tons	1,671,130	876,395	901,107	2,034,814
Saskatchewan .....	Tons	1,475,006	680,297	347,012	376,589
British Columbia .....	Tons	899,403	672,527	283,651	197,521
Manitoba .....	Tons	583,414	247,480	153,561	115,771
Ontario .....	Tons	162,898	68,379	29,952	24,893
Quebec .....	Tons	-	165	75	-
China and Japan .....	Tons	42,192	40,745	316,787	709,977
United States .....	Tons	91,235	46,079	9,219	12,206
West Germany .....	Tons	-	-	-	8
Ships' Bunkers .....	Tons	4,107	-	-	-
Total Sales .....	Tons	7,433,989	2,784,760	2,073,367	3,478,410
Colliery Boilers .....	Tons	173,575	47,075	3,458	*
Colliery Railroads .....	Tons	1,928	1,016	550	-
Used Making Briquettes .....	Tons	266,178	255,131	26,565	*
Used Making Char .....	Tons	-	-	-	*
Used Making Coke .....	Tons	81,128	-	-	-
Put to Stock .....	Tons	48,620	269,730	280,204	113,354
Put to Waste .....	Tons	132,776	79,142	8,262	10,316
Lifted from Stock .....	Tons	39,915	280,630	262,558	128,279
Lifted from Waste .....	Tons	23,683	870	42,538	6,547
TOTAL OUTPUT .....	Tons	8,074,596	3,155,354	2,087,310	3,467,254
COAL BY-PRODUCTS					
Total Tonnage Briquettes Produced	Tons	282,898	265,645	28,631	27,904
Total Tonnage Coke Produced	Tons	52,627	-	-	-
Total Tonnage Char Produced	Tons	-	-	40	11,387

\* Included in Alberta consumption



Coal is classified on the basis of standard tests. These tests determine the percentage of moisture, ash, gaseous material and fixed carbon contained in a sample. The gaseous material is commonly referred to as volatile matter.

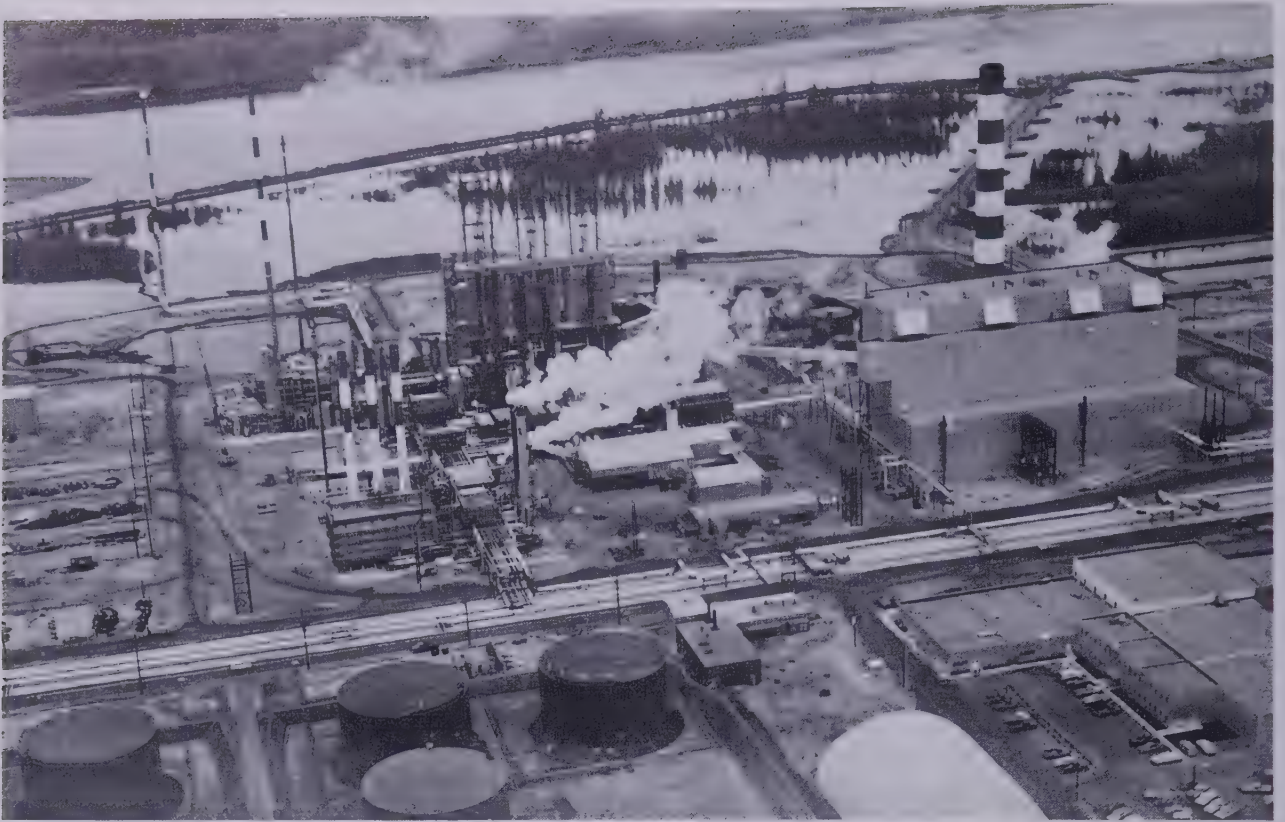
Moisture and ash are detrimental to coal. Volatile matter makes coal burn more rapidly. Fixed carbon provides the high heat value. Heat is usually expressed in terms of British Thermal Units or B. T. U. 's per pound.

Alberta coal is classified in five groups according to these tests.

- GROUP 1 - Low volatile, non-coking coal from mountain areas. Commonly called steam coal.  
 - A good storage, weather resistant coal which burns with a short, slightly smoky flame and is used mainly for generation of steam. This coal, when briquetted is also used for domestic heating.  
 - Important areas where this coal is mined are: Cascade, Highwood, Nordegg.
- GROUP 2 - High volatile, coking bituminous coal from mountain areas. Also commonly called steam coal.  
 - A good storage, weather resistant coal which burns with a medium long, smoky flame. It is used for railways and for steam raising in general and also used for making coke, as smithy coal, and in the cement industry.  
 - Important areas of this group are: Crowsnest and Mountain Park.
- GROUP 3 - High volatile, non-coking coal, principally from the foothills areas.  
 - A good storage, weather resistant coal. It is a free-burning, non-coking coal that burns with a long, slightly smoky flame. Used for domestic and for steam raising purposes. It is a strong coal and can be shipped and stored reasonably well.  
 - Important areas of this group are: Coalspur, Lethbridge, Prairie Creek, Saunders.
- GROUP 4 - A so-called domestic coal, fair storage, from prairie areas, can be stored, with care, under cover.  
 - It is a free-burning, non-coking coal, that ignites easily and burns with a long, smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.  
 - Important areas of this group are: Carbon, Drumheller, Edmonton, Pembina, Taber.
- GROUP 5 - A so-called domestic coal, poor storage, from prairie areas.  
 - It is free-burning, non-coking coal, that ignites easily and burns with a long, smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.  
 - Important areas of this group are: Camrose, Castor, Sheerness, Tofield.

An analysis is given in the following table for each group, but it must be understood that as there is a wide range of coals in each group the analysis given for any group is merely typical and may be far from representative of some coals in the group.

		<u>Group 1</u>	<u>Group 2</u>	<u>Group 3</u>	<u>Group 4</u>	<u>Group 5</u>
Moisture	%	1 1/2	1 1/2	10	19	27
Ash	%	8 1/2	12 1/2	10	7	7
Volatile Matter	%	15	25	34	30	28
Fixed Carbon	%	75	61	46	44	38
Heat Value	B. T. U. /lb.	14,000	13,200	10,900	9,700	8,300



*The Great Canadian Oil Sands extraction plant and an oil drilling rig  
tap the vast oil reserves of northern Alberta.*





# ATHABASCA OIL SANDS

Major deposits of oil impregnated sands are found over an area of 21,000 square miles in northeastern Alberta. On the banks of the Athabasca River the tarry outcroppings are plainly discernible, while in other places the overburden is 2,000 feet thick. It has been estimated that these deposits contain over 700 billion barrels of crude oil from which 300 billion barrels of upgraded synthetic crude oil could be produced.

The oil sands are part of the McMurray formation which is Lower Cretaceous in age.

The oil, viscous and asphaltic, displays considerable variation in properties. The viscosity, or the oil's resistance to flow, varies from 6,000 to 600,000 poise at 50°F. The poise is a measurement of the time required for a specific volume of oil to flow through a hole of a definite size. The specific gravity (at 25°C), or the ratio of the weight of a gallon of oil to weight of a gallon of water, ranges from 1.005 to 1.025. The volatility, or readiness to evaporate, of the higher hydro-carbons present, corresponds to the heavy gasoline groups. Varying amounts of sulphur occur throughout the deposit. The crude oil is very susceptible to thermal decomposition. The oil obtained is defined as synthetic because, once separated from the sand, it must be "re-made" or reconstituted.

The Great Canadian Oil Sands Limited recovery plant, 20 miles north of the Town of Fort McMurray, began production in 1967. The leased deposit is close enough to the surface to make strip mining economical. The recovery method used is called the "hot water process." The sand is mixed with steam, then the oily "slush" is dropped into a hot water bath where the sand sinks to the bottom and the oily top is skimmed off. The resulting product, bitumin, is upgraded to produce 45,000 barrels per day of synthetic crude. In addition, approximately 3,000 tons per day of petroleum coke and 375 tons per day of elemental sulphur are produced.

A 226 mile pipeline was built to transport the synthetic crude oil from Fort McMurray to Edmonton.

The establishment of the Great Canadian Oil Sands Limited plant has spurred the growth of Fort McMurray. Population is expected to reach at least 5,000 when resident plant workers and necessary commercial and ancillary services are firmly established.



# OIL AND GAS

Energy resources are essential to industrial growth. The development of the vast oil and gas reserves of Alberta has contributed greatly to the progress of industrialization in the province and the rest of Canada.

Oil and gas pipelines, emanating from Alberta, span the prairie eastward and the Rocky Mountains westward to supply both central Canada and the west coast with vital sources of energy. In 1950, the Interprovincial pipeline was completed to carry crude oil from Edmonton to Superior, Wisconsin; the line was extended to Sarnia, Ontario in 1953, and late in 1957, the pipeline was extended to Toronto. The second cross-country pipeline, the Trans Canada pipeline, was completed in 1958 to supply markets as far east as Montreal with natural gas. The Trans Mountain pipeline, finished in 1953, and the Westcoast Transmission pipeline, completed in 1957, supply oil and natural gas, respectively, to the west coast. In 1955, the Trans Mountain pipeline was extended to the Puget Sound area of the United States. Alberta natural gas was being exported to California by 1961, via the Alberta Gas Trunk Line, which transports the gas as far as the Crowsnest Pass region. Two interconnecting pipelines deliver the gas to California.

With 6.7 billion barrels of proved remaining reserves of crude oil, Alberta had about 87 per cent of the western Canada total at year end, 1966. These crude oil reserves are adequate to serve present markets for over 30 years at current rates of consumption. The remaining marketable natural gas reserves in Alberta amounted to 38.1 trillion cubic feet, also adequate for over 30 years. Proved remaining reserves of natural gas liquids and sulphur totalled 1.2 billion barrels and 110 million long tons, respectively.

In 1965, the Rainbow and Zama Lake areas of northwestern Alberta became the focal point of oil well exploration and development activity. Recoverable reserves from the Rainbow pools were estimated at more than 285 millions of barrels at the end of 1966. Ultimate recoverable reserves may exceed all conventional oil elsewhere in the province.

The value of crude oil, natural gas, and related products in 1966 amounted to over 90 per cent of the \$871 million value of minerals produced in Alberta. Daily crude oil production averaged 555,000 barrels. Of the 203 million barrels produced, 42 per cent was sold to users in other Canadian provinces. United States customers received 43 per cent of the total. Of the 1.1 trillion cubic feet of natural gas produced, 28 per cent was sold to the other provinces, and 30 per cent was exported to United States markets.

Canada could be wholly self-sufficient as far as crude oil requirements are concerned. However, oil for the Montreal and east coast consuming areas can be imported more cheaply than oil can be transported from western Canada. The bulk of Canadian imports of oil, totalling about 158.5 million barrels annually, come from Venezuela. Alberta natural gas is being supplied economically as far east as Montreal.

Oil was produced in Alberta for many years prior to the Second World War. The first oil discovery of commercial significance, a heavy crude, was at Wainwright in 1925. Similar discoveries were made later at Vermilion and Lloydminster. In 1936, the first major light crude oil discovery was made at Turner Valley which until then had produced only natural gas and naphtha gasoline. Most large oil companies established their western headquarters in Calgary, close to that first light crude oil field.

The year 1947 was significant to the economy of Alberta. In that year the Leduc oilfield was discovered. Subsequent developments have literally transformed the economy of the province. The economic base has diversified. Agriculture is now more than balanced by mining and manufacturing operations. Much of the industrial progress which has taken place in Alberta is directly or indirectly related to the development of the oil industry.

An Oil and Gas Conservation Board was established in 1938 to control or eliminate the wasteful production practices which had been particularly apparent in the Turner Valley field. The Board ensures orderly development of provincial oil and gas reserves. A new crude oil proration plan introduced in 1966 becomes fully effective in 1969. The general purpose of the plan is to increase production from pools by encouraging secondary recovery schemes and to facilitate savings through the elimination of unnecessary wells.

Oil and gas firms invested about \$11 billion in Alberta in the 20 years after 1947. This investment has taken many forms: refineries, gas processing plants, pipelines, and expenditures on exploration, development and production.

	Total Revenue April 1, 1949 to March 31, 1962	1962-63	1963-64	1964-65	1965-66	1966-67	Total Revenue April 1, 1949 to March 31, 1967
	\$	\$	\$	\$	\$	\$	\$
Coal							
Fees and Rental	1,399,255	45,777	89,254	62,602	45,940	83,540	1,726,368
Royalty	3,443,743	112,598	122,488	174,003	212,480	215,939	4,281,251
Sundry Revenue	46,822	2,372	2,127	2,292	2,373	2,303	58,289
Petroleum and Natural Gas							
Fees and Rental	300,402,693	38,684,477	38,522,814	48,032,061	57,017,924	52,240,051	534,900,020
Royalty	290,742,229	51,038,313	56,747,130	62,094,572	68,634,352	80,214,494	609,471,090
Crown Reserve Sales	609,418,764	30,498,553	52,894,139	91,908,327	121,050,116	106,225,024	1,011,994,923
Salt							
Fees and Rental	14,765	1,006	1,006	1,005	1,006	1,005	19,793
Royalty	112,679	13,754	12,742	15,893	18,164	18,657	191,889
Quarrying							
Fees and Rental	4,299	140	101	31	46	31	4,648
Royalty	564,831	68,071	63,129	63,733	88,143	83,921	931,828
Quartz							
Fees and Royalty	35,336	4,335	4,155	4,790	4,165	50	52,831
Placer							
Fees and Royalty	6,342	450	-	-	-	-	6,792
Bituminous Sands							
Fees, Rental and Royalty	3,324,495	654,685	644,907	825,801	654,638	663,547	6,768,073
Oil Sands							
Fees and Rental	178,841	184,531	171,461	240,882	226,772	207,083	1,209,570
Mining Miscellaneous							
Fees, Rental and Royalty	2,212,783	152,795	152,528	165,306	184,815	178,528	3,046,755
Mineral Taxation Act							
Non-Producing Area Tax	3,844,227	530,170	550,218	579,560	541,940	572,858	6,618,973
Producing Area Tax	11,054,819	1,210,475	1,367,776	1,360,839	1,379,885	1,292,079	17,665,873
Certificate Fees	13,819	446	203	369	171	207	15,215
Pipe Line Act Sundry Revenue	26,627	11,029	11,784	10,543	11,595	12,165	83,743
Administration Sundry Revenue	809,619	85,641	73,785	83,773	75,243	55,549	1,183,610
<b>TOTAL</b>	<b>1,227,656,988</b>	<b>123,299,618</b>	<b>151,431,747</b>	<b>205,628,382</b>	<b>250,149,768</b>	<b>242,067,031</b>	<b>2,200,231,534</b>

## OIL INDUSTRY STATISTICS,

Table 34

	1947	1948	1949	1950	1951	1952	1953	1954	1955
Footage Drilled									
Development	546,005	1,199,839	2,256,931	3,110,588	3,284,444	4,239,012	4,249,826	3,574,240	6,201,839
Outpost	-	-	-	-	-	527,970	323,034	283,109	269,549
Exploration	336,353	463,848	944,966	1,219,610	2,278,221	1,864,547	1,850,029	1,817,410	1,973,190
Totals	882,358	1,663,687	3,201,897	4,330,198	5,562,665	6,631,529	6,422,889	5,674,759	8,444,578
Well Completions									
Development									
Oil	100	206	525	719	691	830	795	579	1,077
Gas	30	14	20	19	21	69	82	70	60
Dry	21	28	39	50	71	161	169	104	82
Service Wells	-	-	-	-	-	-	-	2	13
Outpost									
Oil	-	-	-	-	-	67	43	34	23
Gas	-	-	-	-	-	11	24	15	8
Dry	-	-	-	-	-	36	35	23	18
Exploration									
Oil	7	11	15	34	68	49	47	60	45
Gas	6	8	15	21	94	74	89	55	70
Dry	58	107	179	169	293	332	277	236	231
Totals	222	374	793	1,012	1,238	1,629	1,561	1,178	1,627
Total Oil	107	217	540	753	759	946	885	673	1,145
Total Gas	36	22	35	40	115	154	195	140	138
Total Dry	79	135	218	219	364	529	481	363	331
Service Wells	-	-	-	-	-	-	-	2	13
Producing Oil Wells	502	717	1,242	1,995	2,731	3,661	4,504	5,068	6,135
Producing Gas Wells	177	199	234	303	331	362	404	470	489
Capped Gas Wells	119	114	109	75	157	259	393	491	609
Expenditures on Expl. & Dev. \$ 25,000,000	50,000,000	100,000,000	150,000,000	200,000,000	250,000,000	280,000,000	308,000,000	340,000,000	
Crude Oil Production (bbls.)	6,382,065	10,504,928	19,767,845	27,149,369	45,915,403	58,829,029	76,696,276	87,585,011	112,848,673
Average Daily	20,000	36,000	53,000	79,000	122,000	180,000	246,000	278,000	349,000
Possible Daily	20,000	36,000	150,000	189,000	214,000	276,000	317,000	365,000	630,000
Market Distribution									
Prairies	6,341,306	10,441,787	19,377,489	25,121,337	31,289,876	36,761,805	39,831,259	37,695,259	40,286,602
British Columbia	-	-	-	-	-	508,861	2,680,024	13,463,944	19,327,798
Other Canadian & exports	-	-	-	-	14,129,328	21,088,781	25,630,021	36,690,387	51,018,084
Natural Gas Production (mcf)	53,321,858	60,739,364	68,135,929	74,933,207	83,784,797	95,834,771	114,147,745	135,545,629	168,808,357
Consumed in Alberta	39,077,953	45,085,378	47,945,861	56,367,452	63,200,771	62,385,008	71,156,973	88,633,623	105,531,295
Consumed outside Alberta	-	-	-	-	268,061	8,551,128	10,067,085	7,687,977	12,058,901
Gas Products									
Propane (bbls.)	-	8,486	54,158	141,070	248,554	337,678	433,083	529,117	796,462
Butane (bbls.)	-	-	-	33,906	84,527	140,228	198,401	245,189	492,051
Pentanes Plus (bbls.)	427,225	468,655	477,446	446,384	515,027	579,873	722,906	734,456	1,054,789
Sulphur (long tons)	-	-	-	-	-	8,931	18,298	22,320	29,093
Crown P & N.G. Reservations									
Number	114	295	506	502	699	704	396	547	771
Acres	11,472,501	23,473,490	36,989,816	37,123,411	48,261,209	41,286,091	23,514,752	27,260,913	35,899,547
Crown P & N.G. Permits									
Number	-	-	-	-	-	-	-	-	-
Acres	-	-	-	-	-	-	-	-	-
Crown P & N.G. Leases									
Number	2,458	4,606	6,500	9,351	14,329	20,062	23,343	23,207	23,273
Acres	907,624	2,556,083	3,395,692	5,769,336	9,113,083	14,902,396	19,149,799	17,525,459	17,557,993
Crown Natural Gas Licences									
Number	-	-	-	-	25	39	47	25	28
Acres	-	-	-	-	1,596,326	1,861,085	1,861,188	694,869	798,044
Crown Natural Gas Leases									
Number	-	-	-	-	-	-	23	163	222
Acres	-	-	-	-	-	-	163,917	853,800	1,052,899
Sales of Crown Reserves (\$)									
P & N.G. Leases	-	3,142,258	19,165,932	36,260,288	13,680,394	22,357,440	17,596,810	23,810,941	40,258,826
P & N.G. Reservations	-	-	596,634	-	1,398,174	35,365	3,698,908	32,887,754	13,544,803
Drilling Reservations	-	-	-	-	-	-	-	7,244,730	8,259,252
N.G. Licences	-	-	-	-	-	-	1,239,171	876,049	303,219
N.G. Leases	-	-	-	-	-	-	231,672	31,114	8,674
Total	-	3,142,258	19,762,566	36,260,288	15,078,568	22,392,805	22,766,561	64,850,588	62,374,774
Crown Rentals									
P & N.G.	563,597	2,018,612	5,018,928	8,584,587	14,119,468	17,838,941	20,974,141	24,216,533	20,211,440
Natural Gas	-	-	-	-	286,619	113,447	100,170	185,609	266,244
Total	563,597	2,018,612	5,018,928	8,584,587	14,406,087	17,952,388	21,074,311	24,402,142	20,477,684
Crown Royalties									
Oil	766,143	1,379,118	3,275,779	4,852,455	9,842,865	12,535,463	15,958,766	19,175,010	25,551,609
Gas	-	-	-	-	157,747	299,703	339,463	438,135	493,862
Gas Products	-	-	-	-	-	26,116	43,607	54,634	58,185
Total	766,143	1,379,118	3,275,779	4,852,455	10,000,612	12,861,282	16,341,836	19,667,779	26,103,656
REVENUE TOTALS \$	1,329,740	6,539,988	28,057,273	49,697,330	39,485,267	53,206,475	60,182,708	108,920,509	108,956,114



## ALBERTA, 1947-1966

1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
7,695,927	4,811,872	6,506,974	6,112,071	7,210,648	6,986,248	5,345,022	6,685,162	6,454,366	5,898,123	4,355,448
215,523	283,641	417,073	339,886	588,053	559,992	346,632	397,069	877,740	1,128,668	759,145
2,182,129	2,377,012	2,191,246	2,357,587	2,350,396	2,396,032	2,815,025	2,724,560	3,008,416	3,406,338	3,112,593
10,093,579	7,472,525	9,115,293	8,809,544	10,149,097	9,942,272	9,106,679	9,806,791	10,340,522	10,433,129	8,227,186
1,306	797	899	818	930	724	645	788	768	775	629
64	55	141	144	153	188	175	177	145	114	195
98	88	104	128	117	138	207	189	169	211	161
6	13	93	27	62	39	12	19	17	21	39
11	21	25	16	14	17	8	16	30	68	49
15	18	23	20	31	43	15	9	33	41	68
14	28	30	19	57	39	25	35	81	89	80
51	56	35	43	41	42	35	65	63	76	78
59	52	63	78	92	113	82	89	88	85	108
274	320	306	309	269	268	352	336	413	509	507
1,898	1,448	1,719	1,602	1,766	1,611	1,556	1,723	1,807	1,989	1,914
1,368	874	959	877	985	783	688	869	861	919	756
138	125	227	242	276	344	272	275	266	240	371
386	436	440	456	443	445	584	560	663	809	748
6	13	93	27	62	39	12	19	17	21	39
7,390	8,016	8,536	9,216	9,878	10,529	10,809	11,437	12,114	12,771	13,162
523	585	705	832	950	1,088	1,257	1,437	1,628	1,800	1,921
713	766	871	981	1,127	1,314	1,388	1,466	1,497	1,515	1,586
400,000,000	375,000,000	360,000,000	360,000,000	380,000,000	375,000,000	365,000,000	380,000,000	440,000,000	510,000,000	530,000,000
143,708,724	136,805,980	112,519,292	128,828,635	130,506,885	157,811,712	165,124,967	168,214,054	176,183,758	184,155,669	203,339,443
434,000	289,000	363,000	399,000	374,000	470,000	451,000	497,000	519,000	495,000	626,000
746,000	793,000	797,000	838,000	868,000	936,000	956,000	986,000	1,089,000	1,150,000	1,350,000
42,011,014	44,261,561	39,978,626	44,555,514	45,614,522	43,946,192	48,496,782	49,383,191	49,037,744	56,335,304	59,587,016
21,894,038	22,300,264	20,680,988	22,585,326	23,282,402	23,867,278	19,431,279	14,379,258	18,489,408	17,886,686	19,990,337
80,325,223	74,244,869	52,261,001	63,714,793	65,933,665	96,756,744	113,210,013	125,478,596	132,552,666	135,839,706	150,951,935
200,191,107	244,219,878	294,448,877	352,733,681	443,408,780	569,689,295	843,816,821	1,006,728,849	1,184,754,869	1,290,364,470	1,362,583,734
116,938,508	130,567,165	134,395,260	153,870,277	166,832,515	165,846,674	185,718,278	199,541,073	209,261,383	228,087,785	246,172,839
11,755,193	22,503,907	71,913,408	123,490,047	185,871,125	278,297,782	455,374,219	512,913,251	608,686,603	664,933,732	700,102,679
925,716	1,111,355	1,054,702	1,593,189	1,936,986	2,288,129	3,199,390	3,551,726	5,624,415	9,134,146	11,388,258
591,638	747,709	659,661	1,149,856	1,231,774	1,596,768	2,188,951	2,528,330	4,700,660	6,111,117	7,334,110
1,119,936	1,702,029	1,849,831	2,809,529	4,354,399	7,753,308	16,526,700	20,674,889	23,289,914	26,085,824	27,360,178
33,464	100,706	122,326	238,644	389,926	434,396	972,351	1,227,667	1,413,154	1,538,428	1,676,220
1,051	1,046	899	858	777	746	670	765	962	1,067	1,003
54,636,137	51,549,007	41,855,568	38,196,179	31,298,342	29,104,163	26,427,143	33,337,562	42,621,659	49,046,047	43,083,162
-	-	-	-	-	-	88	131	200	194	171
-	-	-	-	-	-	1,212,062	1,672,879	2,671,421	2,671,555	2,500,174
24,584	27,167	28,823	31,220	30,650	30,934	30,237	29,396	29,183	29,610	29,476
19,212,862	22,213,525	24,669,593	28,874,344	28,614,876	28,230,824	27,529,854	27,321,954	27,572,765	28,939,445	29,751,210
26	28	28	49	49	49	24	18	17	3	10
645,858	544,220	557,387	1,241,061	1,250,231	1,164,889	766,760	343,211	275,160	60,640	143,421
265	302	375	444	544	704	813	899	961	1,045	1,090
1,308,334	1,540,398	1,706,610	1,951,937	2,250,890	2,843,259	3,536,263	3,880,248	4,033,563	4,220,085	4,230,968
66,729,673	40,365,608	26,943,761	50,202,900	39,563,522	31,420,897	16,048,744	26,130,753	59,515,930	79,426,545	76,362,739
1,103,633	15,621,854	10,680,718	5,777,783	1,468,561	478,657	3,311,768	1,443,640	1,573,080	-	391,358
3,858,218	11,503,167	11,881,522	14,240,583	9,227,304	10,660,447	11,211,661	18,777,063	23,659,662	39,803,733	21,568,415
961,685	713,763	996,145	1,303,873	3,649,160	1,164,595	2,514,759	178,810	-	396,818	721,180
6,866	15,379	579,501	302,603	55,533	906,560	67,039	117,120	71,480	34,703	76,681
72,660,075	68,219,771	51,081,647	71,827,742	53,964,080	44,631,156	33,153,971	46,647,386	84,820,152	119,661,799	99,120,373
24,669,980	29,767,283	29,676,306	31,664,033	31,360,182	30,140,780	37,633,688	36,870,533	41,826,622	56,256,600	52,089,454
288,850	334,316	387,656	589,594	631,694	720,124	842,303	921,906	944,654	1,151,120	1,130,848
24,958,830	30,101,599	30,063,962	32,253,627	31,991,876	30,860,904	38,475,991	37,792,439	42,771,276	57,407,720	53,220,302
34,841,941	35,384,313	23,235,087	25,981,835	25,612,872	32,062,246	40,888,891	43,457,215	47,060,200	51,058,300	56,787,959
525,556	583,460	994,893	1,291,029	1,782,699	2,537,158	4,760,809	7,434,857	8,063,019	9,015,049	9,342,797
66,148	70,718	64,771	58,382	144,171	832,140	2,340,091	4,246,819	5,730,574	7,897,702	9,134,857
35,433,645	36,038,491	24,294,751	27,331,246	27,539,742	35,431,544	47,989,791	55,138,891	60,853,793	67,971,051	75,265,613
133,052,550	134,359,861	105,440,360	131,412,615	113,495,698	110,923,604	119,619,753	139,578,716	188,445,221	245,040,570	227,606,288

Table 35

ESTIMATED PROVEN RESERVES OF NATURAL GAS IN CANADA AT YEAR END,  
1956 - 1965  
(Millions of Cubic Feet at 14.65 psia and 60°F.)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Northwest Territories	29,974	29,705	29,427	32,063	37,366	62,563	61,897	56,114	55,383	100,394
British Columbia	1,590,940	1,803,075	1,687,626	1,825,238	3,097,930	3,618,629	4,932,600	5,765,790	6,931,445	6,750,244
Alberta	16,333,084	17,702,885	20,222,824	23,300,669	26,014,370	28,370,122	29,177,363	29,916,388	35,198,661	36,356,749
Saskatchewan	889,907	1,011,118	1,165,003	1,235,592	1,305,759	1,264,227	1,062,201	1,008,955	1,040,669	973,594
Manitoba	3,738	2,993	2,345	1,959	1,559	1,247	1,050	1,869	3,473	3,490
Total Western Canada	18,847,643	20,549,776	23,107,225	26,395,521	30,456,984	33,316,788	35,235,121	36,749,116	43,229,631	44,184,471
Eastern Canada	150,612	192,355	187,827	209,815	217,068	221,062	201,771	210,907	161,243	187,820
TOTAL CANADA	18,998,255	20,742,131	23,295,052	26,605,336	30,674,052	33,537,850	35,436,892	36,960,023	43,390,874	44,372,291

Table 36

NATURAL GAS PRODUCTION<sup>a</sup>, BY PROVINCES  
CUMULATIVE TO 1947 -- ANNUAL 1948 - 1966  
(Millions of Cubic Feet at 14.65 psia and 60°F.)

	Alberta	British Columbia	Northwest Territories	Sask- atchewan	Western Canada	Percent of Total Canada	Eastern Canada	Percent of Total Canada	Canadian Total
All Time Cumulative to December 31, 1947	1,699,517	-	1,572	1,722	1,702,811	78.6	464,018	21.4	2,166,829
1948	53,104	-	154	437	53,695	85.6	9,010	14.4	62,705
1949	63,237	-	65	472	63,774	88.4	8,396	11.6	72,170
1950	72,014	-	66	816	72,896	89.7	8,372	10.3	81,268
1951	79,780	-	107	861	80,748	90.3	8,705	9.7	89,453
1952	91,329	-	135	1,139	92,603	91.6	8,505	8.4	101,108
1953	109,691	-	132	1,628	111,451	91.8	10,012	8.2	121,463
1954	128,913	60	144	4,824	133,941	92.9	10,199	7.1	144,140
1955	158,806	166	176	11,320	170,468	93.9	11,039	6.1	181,507
1956	187,804	265	274	19,696	208,039	94.1	13,001	5.9	221,040
1957	223,072	8,401	214	33,355	265,042	94.8	14,577	5.2	279,619
1958	271,192	62,957	286	41,924	376,359	95.9	16,272	4.1	392,631
1959	331,163	68,760	295	53,874	454,092	96.4	16,957	3.6	471,049
1960	416,843	84,899	329	52,450	554,521	97.0	17,086	3.0	571,607
1961	535,208	103,397	461	57,907	696,973	97.9	14,720	2.1	711,693
1962	781,911	128,726	653	61,140	972,430	98.4	15,829	1.6	988,259
1963	871,488	133,749	777	59,274	1,065,288	98.5	16,111	1.5	1,081,399
1964	993,484	145,603	768	62,809	1,202,664	98.8	13,997	1.2	1,216,661
1965	1,082,345	168,334	646	60,053	1,311,378	99.0	12,871	1.0	1,324,249
1966	1,149,978	197,470	705	66,173	1,414,326	98.9	15,740	1.1	1,430,066
TOTAL	9,300,879	1,102,787	7,959	591,874	11,003,499	94.0	705,417	6.0	11,708,916

<sup>a</sup>Raw Natural Gas production less storage and injection

Table 37 ESTIMATED PROVEN REMAINING RESERVES OF LIQUID HYDROCARBONS IN CANADA AT YEAR END, 1956 - 1966

(In 35 Imperial Gallon Barrels which are Equivalent to 42 U.S. Gallon Barrels)

(thousands of barrels)

	1956	1958	1960	1962	1963	1964	1965	1966
<b>Crude Oil</b>								
Northwest Territories	53,258	52,409	51,498	50,412	49,799	49,164	47,900	47,125
British Columbia	2,482	8,958	44,956	136,577	136,427	204,040	231,822	263,784
Alberta	2,389,296	2,572,610	3,051,192	3,807,009	4,140,847	5,279,146	5,719,683	6,720,500
Saskatchewan	358,693	497,372	502,078	462,372	523,457	602,352	661,672	696,785
Manitoba	42,005	27,500	20,750	14,928	23,797	33,637	41,071	58,330
Total Western Canada	2,845,734	3,158,849	3,670,474	4,471,298	4,874,327	6,168,339	6,702,148	7,786,524
Ontario					7,146	9,294	9,080	5,222
Other Eastern Canada	3,636	7,055	8,068	9,404	19	13	9	5
Total Crude Oil	2,849,370	3,165,904	3,678,542	4,480,702	4,881,492	6,177,646	6,711,237	7,791,751
<b>Natural Gas Liquids</b>								
British Columbia	28,884	27,576	32,982	35,779	33,488	44,956	38,511	41,025
Saskatchewan	-	34,037	20,473	11,540	8,190	8,111	8,124	9,233
Alberta	251,050	422,580	485,066	648,031	706,067	834,683	952,204	1,208,609
Total Natural Gas Liquids	279,934	484,193	538,521	695,350	747,745	887,750	998,839	1,258,867
Total Liquid Hydrocarbons in Canada	3,129,304	3,650,097	4,217,063	5,176,052	5,629,237	7,065,396	7,710,076	9,050,618

Table 38

CRUDE OIL PRODUCTION, BY PROVINCES, CUMULATIVE TO 1947 — ANNUAL 1948 - 1966

(thousands of barrels)

	Alberta*	British Columbia	Manitoba	Northwest Territories	Saskatchewan	Western Canada	Percent of Total Canada	Eastern Canada	Percent of Total Canada	Canadian Total
All Time Cumulative to Dec. 31, 1947	82,148	-	-	2,464	675	85,287	73.0	31,536	27.0	116,823
1948	10,505	-	-	350	843	11,698	98.3	198	1.7	11,896
1949	19,768	-	-	183	780	20,731	98.7	280	1.3	21,011
1950	27,149	-	-	189	1,040	28,378	99.1	268	0.9	28,646
1951	45,836	-	12	228	1,247	47,323	99.6	212	0.4	47,535
1952	58,837	-	107	314	1,697	60,955	99.7	207	0.3	61,162
1953	76,702	-	656	317	2,791	80,466	99.6	314	0.4	80,780
1954	87,593	-	2,148	370	5,423	95,534	99.6	426	0.4	95,960
1955	112,853	1	4,146	405	11,317	128,722	99.6	538	0.4	129,260
1956	143,712	148	5,786	449	21,078	171,173	99.6	614	0.4	171,787
1957	136,766	345	6,090	421	36,861	180,483	99.6	643	0.4	181,126
1958	112,477	514	5,829	445	44,626	163,891	99.5	794	0.5	164,685
1959	128,805	865	5,056	422	47,440	182,588	99.4	1,016	0.6	183,604
1960	130,489	868	4,764	455	51,910	188,486	99.5	1,019	0.5	189,505
1961	157,768	1,016	4,480	487	55,860	219,611	99.5	1,161	0.5	220,772
1962	165,131	8,905	3,927	598	64,432	242,993	99.5	1,145	0.5	244,138
1963	168,233	12,515	3,771	611	71,303	256,433	99.5	1,213	0.5	257,646
1964	175,453	11,525	4,417	608	81,385	273,388	99.5	1,251	0.5	274,639
1965	183,610	13,470	4,946	645	87,789	290,460	99.6	1,283	0.4	291,743
1966	202,605	16,638	5,231	750	93,209	318,433	99.6	1,330	0.4	319,763
Total	2,226,440	66,810	61,366	10,711	681,706	3,047,033	98.5	45,448	1.5	3,092,481

\* Some condensate included prior to 1951



Table 39

## CRUDE OIL FIELDS PRODUCTION, 1914 - 1966

(millions of barrels)

	1914-1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	Total
Acheson	15.8	1.7	2.1	1.8	2.3	2.5	2.4	2.2	2.1	2.3	35.2
Bantry	0.3	0.1	0.2	0.2	0.3	0.3	0.4	1.0	1.4	1.6	5.8
Bonnie Glen	39.6	4.2	5.9	5.1	6.3	8.7	7.6	6.8	6.3	7.4	97.9
Carson Creek North	-	-	-	0.4	0.9	1.4	1.4	1.4	2.2	2.6	10.3
Fenn Big Valley	34.3	5.6	6.2	5.5	6.1	6.0	5.6	5.2	5.0	5.7	85.2
Garrington	0.1	0.1	0.3	0.4	0.7	1.1	1.2	1.5	1.4	1.0	7.8
Gilby	1.6	1.1	1.2	1.4	1.5	1.6	1.8	1.9	1.8	1.3	15.2
Golden Spike	16.8	0.9	1.8	1.5	2.9	4.2	3.7	3.1	3.5	4.6	43.0
Harmattan East	0.1	0.4	1.1	1.5	1.9	2.3	2.5	2.5	2.1	1.9	16.3
Harmattan Elkton	2.4	2.0	1.8	1.4	2.2	2.3	2.2	1.5	1.5	1.5	18.8
Innisfail	0.2	1.2	2.3	2.3	2.5	2.8	2.7	2.7	1.8	1.8	20.3
Joarcam	26.4	3.5	3.4	3.4	3.3	2.8	3.0	2.9	2.7	2.5	53.9
Joffre	8.8	5.4	6.3	6.2	5.7	4.4	3.9	3.6	2.2	1.7	48.2
Judy Creek	-	-	0.1	1.1	3.5	5.5	6.4	7.5	9.0	9.9	43.0
Kaybob	-	0.4	1.2	2.0	2.4	2.5	2.7	2.7	3.0	2.8	19.7
Kaybob South	-	-	-	-	-	-	0.3	1.4	1.7	1.7	5.1
Leduc-Woodbend	158.6	14.9	14.6	13.4	15.2	12.6	11.9	11.5	9.4	8.1	270.2
Medicine River	0.1	0.1	0.2	0.3	0.3	0.5	1.1	1.5	1.8	1.8	7.7
Mitsue	-	-	-	-	-	-	-	0.1	2.2	4.3	6.6
Nipisi	-	-	-	-	-	-	-	-	0.3	2.8	3.1
Pembina	87.5	34.6	37.1	39.3	42.7	38.0	39.7	40.6	38.7	37.8	436.0
Rainbow	-	-	-	-	-	-	-	-	-	2.6	2.6
Redwater	188.8	13.1	15.1	12.6	15.4	17.7	16.4	15.5	14.2	15.4	324.2
Simonette	-	-	0.1	0.2	0.6	0.9	0.9	0.9	1.0	1.2	5.8
Snipe Lake	-	-	-	-	-	-	0.6	1.9	2.5	2.9	7.9
Stettler	8.6	1.7	1.8	1.6	1.8	1.6	1.5	1.5	1.4	1.3	22.8
Sturgeon Lake South	5.4	2.9	3.2	2.8	3.2	2.7	2.9	2.8	3.1	3.5	32.5
Sundre	1.9	1.1	1.1	1.2	1.2	1.3	1.0	1.0	1.0	1.1	11.9
Swan Hills	-	0.1	1.7	4.0	5.7	7.3	9.0	12.3	17.6	20.5	78.2
Swan Hills South	-	-	0.1	1.0	3.0	4.5	4.7	5.4	7.4	8.9	35.0
Turner Valley	105.2	1.4	1.3	1.2	1.1	1.2	1.2	1.2	1.1	1.0	115.9
Virginia Hills	-	-	0.1	1.0	2.4	2.7	2.9	3.2	4.1	4.5	20.9
Wainwright	2.4	1.1	1.0	0.7	0.6	0.6	0.2	0.7	1.3	1.8	10.4
Westerose	8.2	0.8	1.2	1.0	1.5	1.9	1.7	1.5	1.4	1.6	20.8
Willesden Green	0.6	0.7	0.7	0.9	1.6	2.2	1.9	2.2	2.3	3.0	16.1
Wizard Lake	21.6	1.6	2.7	2.3	3.5	4.6	4.3	3.6	3.3	4.2	51.7
Other Fields and Areas	66.6	11.8	12.9	12.8	15.5	16.4	18.5	20.1	21.8	24.0	220.4
Production	801.9	112.5	128.8	130.5	157.8	165.1	168.2	175.4	183.6	202.6	2,226.4
Cumulative Total		914.4	1,043.2	1,173.7	1,331.5	1,496.6	1,664.8	1,840.2	2,023.8	2,226.4	

# CONSTRUCTION

The Alberta construction industry in 1967 provided employment for more than 60,000 people, who were paid \$400 million in wages and salaries. Construction materials valued at \$598 million were purchased. The industry ranked second to mining in net value of production, accounting for \$692 million or 24 per cent of the total "value added".

Since 1964 the total value of construction work performed has exceeded \$1 billion annually, reaching approximately \$1.3 billion in 1967. Per capita value at \$866, was well above the national average of \$562.

Building construction permit values indicate trends of construction activity in various areas. Annual permit value totals have increased substantially in each of the ten cities, just as all have experienced short term fluctuations around their rising trends.

Table 40

## CONSTRUCTION OF DWELLING UNITS - ALBERTA AND CITIES OF 5,000 POPULATION OR MORE, 1948 - 1966

	Alberta	Calgary**	Edmonton**	Lethbridge	Medicine Hat	Red Deer	Camrose	Lloyd-minster(pt.)	Grande Prairie	Wetaskiwin
1948	6,223	1,375	1,784	226	258	***	***	***	***	***
1949	9,411	1,986	2,361	356	199	***	***	***	***	***
1950	7,266	1,976	2,776	453	117	***	***	***	***	***
1951	6,057	1,882	2,464	260	90	***	***	***	***	***
1952	6,204	2,092	2,864	269	137	92	***	***	***	***
1953	9,854	3,316	3,701	320	155	198	***	***	***	***
1954	10,285	3,167	3,873	384	214	181	***	***	***	***
1955	10,610	3,223	4,076	445	193	276	***	***	***	***
1956	11,622	3,880	3,350	349	200	180	***	***	***	***
1957	9,948	2,919	2,957	213	245	107	32	***	42	***
1958	13,562	4,923	4,702	354	284	214	25	16	171	***
1959	14,183	5,392	4,995	544	333	312	59	50	59	***
1960	11,477	4,508	3,328	418	285	227	85	27	72	***
1961	10,545	3,806	3,212	291	275	328	67	34	94	***
1962	13,493	4,613	5,157	306	245	444	72	31	197	74
1963	12,419	3,783	4,960	256	211	468	81	47	238	93
1964	12,096	3,648	4,837	223	258	503	94	39	181	62
1965	11,355	3,924	4,226	177	174	205	83	63	97	33
1966	10,717	3,752	4,478	114	90	87	53	51	80	30

\*\* Metropolitan Area      \*\*\* Figures not available

Residential construction peaked in 1962, falling off disproportionately faster in the smaller cities. The value per unit has risen, counterbalancing the decline in numbers. A high level of activity in institutional and commercial construction has more than offset the abatement in residential and industrial construction.

Building construction dollar volume which hovered around \$400 million annually from 1958 to 1963, now amounts to \$600 million annually. Engineering construction volume has increased steadily also, rising to an annual rate of about \$700 million in 1967.

The insistent and growing demand for housing resulting from rising family formation rates and increasing urbanization suggests heightened pressures on the housing industry and its suppliers.

Historically an uncertain and volatile sector, the building construction industry may now provide stable year round employment with the introduction of new techniques such as enclosing building projects, the use of portable heaters and by better scheduling of phases of construction.

Table 41

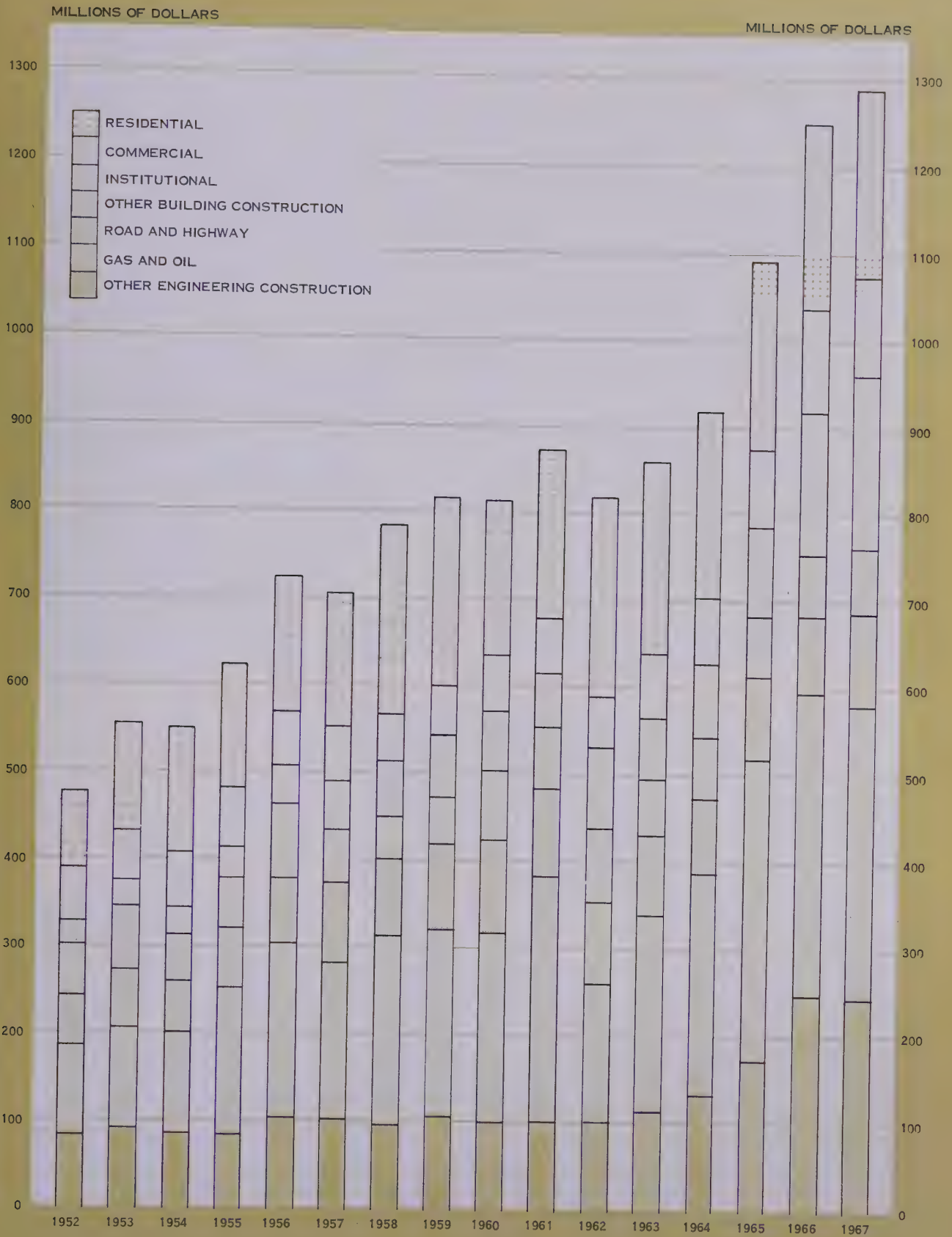
VALUE OF CONSTRUCTION WORK PERFORMED - ALBERTA, 1952-1967  
(thousands of dollars)

		1952 Value	1953 Value	1954 Value	1955 Value	1956 Value	1957 Value	1958 Value	1959 Value
TOTAL CONSTRUCTION		479,232	556,008	550,258	623,605	725,556	707,005	787,336	818,597
TOTAL BUILDING CONSTRUCTION		235,413	282,058	287,976	300,476	345,362	331,580	384,768	397,442
Residential		87,000	123,000	140,200	140,100	155,600	154,000	218,600	216,800
Industrial		44,202	27,390	16,722	23,975	37,297	23,198	16,142	17,644
Commercial		62,032	55,457	63,416	66,278	60,844	61,097	54,654	55,954
Institutional		27,492	30,857	30,977	36,811	41,976	56,041	62,843	69,846
Others		14,687	45,354	36,661	33,312	49,645	37,244	32,529	37,198
TOTAL ENGINEERING CONSTRUCTION		243,819	273,950	262,282	323,129	380,194	375,425	402,568	421,155
Road, Highway and Aerodrome		54,555	65,328	60,766	69,219	74,148	92,367	87,298	99,465
Waterworks and Sewage Systems		24,853	19,714	19,167	19,982	28,745	21,155	22,001	24,245
Dams and Irrigation		13,190	13,963	7,383	7,784	9,252	8,113	6,970	6,489
Electric Power		15,312	12,132	12,814	17,578	21,483	19,721	17,693	19,052
Railway, Telephone and Telegraph		28,912	26,632	29,167	25,527	29,980	35,127	32,706	35,487
Gas and Oil Facilities		103,319	115,514	113,221	166,822	199,603	179,328	216,840	212,546
Other Engineering		3,678	20,667	19,784	16,217	16,983	19,614	19,060	23,871
SALARIES AND WAGES		141,164	177,422	172,931	187,178	225,670	223,460	229,400	248,251
COST OF MATERIALS USED		283,610	264,628	247,360	284,360	325,543	292,052	355,157	367,511
AVERAGE NUMBER OF EMPLOYEES	No.	44,660	50,184	50,934	52,617	60,174	57,866	57,141	58,931
<hr/>									
		1960 Value	1961 Value	1962 Value	1963 Value	1964 Value	1965 Value	(1) 1966 Value	(2) 1967 Value
TOTAL CONSTRUCTION		815,793	876,719	820,209	861,795	919,871	1,093,686	1,249,700	1,289,903
TOTAL BUILDING CONSTRUCTION		389,184	390,230	463,368	428,792	442,900	479,554	565,314	600,523
Residential		177,400	195,300	229,500	221,800	214,200	215,200	209,700	212,100
Industrial		25,368	13,792	19,570	21,460	21,641	23,752	18,606	22,631
Commercial		65,180	63,733	58,679	73,418	75,596	89,948	120,056	117,110
Institutional		68,668	60,620	91,793	69,721	85,048	103,128	163,412	197,519
Others		52,568	56,785	63,826	42,393	46,415	47,526	53,540	51,163
TOTAL ENGINEERING CONSTRUCTION		426,609	486,489	356,841	433,003	476,971	614,112	684,386	689,380
Road, Highway and Aerodrome		106,922	101,099	94,378	91,866	87,003	94,271	87,735	108,720
Waterworks and Sewage Systems		17,819	16,603	18,209	22,146	26,335	25,371	31,987	30,690
Dams and Irrigation		5,894	7,545	9,146	9,208	7,793	7,558	8,965	9,573
Electric Power		20,415	20,768	22,216	24,312	21,346	24,665	21,002	28,626
Railway, Telephone and Telegraph		36,455	32,299	32,461	37,575	41,049	44,879	53,121	76,808
Gas and Oil Facilities		218,300	282,759	159,687	224,126	254,276	344,270	346,856	335,495
Other Engineering		20,804	25,416	20,744	23,770	39,169	73,098	134,720	99,468
SALARIES AND WAGES		244,218	270,128	263,049	270,534	282,535	333,813	387,241	399,719
COST OF MATERIALS USED		370,242	386,068	373,472	391,461	418,845	509,543	579,600	598,210
AVERAGE NUMBER OF EMPLOYEES	No.	57,070	60,453	55,669	53,730	53,463	58,591	61,872	61,112

(1) Preliminary

(2) intentions





VALUE OF CONSTRUCTION PERFORMED, SPECIFIED TYPES, ALBERTA, 1952-1967

Table 42

VALUE OF BUILDING PERMITS ISSUED, BY CENSUS DIVISIONS AND BY CITIES  
ALBERTA, 1948 - 1967  
(thousands of dollars)

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
Division No. 1 .....	1,007	1,004	1,355	1,633	2,431	4,555	2,789	22,528	4,765	4,001
Medicine Hat .....	942	971	1,259	1,570	2,373	3,960	2,418	22,267	4,472	3,691
Division No. 2 .....	4,591	5,271	5,068	5,427	5,477	9,170	10,282	7,384	8,101	6,112
Lethbridge .....	4,464	4,666	4,479	4,821	4,742	7,430	9,029	6,356	7,000	4,931
Division No. 3 .....	583	271	760	690	700	894	521	641	1,068	1,965
Division No. 4 .....	66	76	35	47	86	317	223	413	653	579
Division No. 5 .....	441	333	529	626	527	898	511	665	606	523
Drumheller .....	302	134	346	134	288	133	312	238	175	184
Division No. 6 .....	14,620	22,412	26,405	23,203	53,591	43,745	47,418	61,158	65,510	61,216
Calgary .....	14,003	21,979	25,981	22,537	53,094	42,696	47,047	59,349	62,424	58,112
Division No. 7 .....	725	559	598	865	1,077	2,042	1,306	765	2,038	1,655
Division No. 8 .....	2,038	2,890	2,602	1,957	3,037	5,658	5,321	5,462	5,408	5,314
Red Deer .....	1,213	1,558	1,763	1,002	2,276	3,885	3,781	4,167	3,523	3,232
Division No. 9 .....	54	52	45	40	129	43	19	6	13	41
Division No. 10 .....	919	843	2,053	2,263	3,066	4,251	3,434	3,378	3,179	4,515
Camrose .....	418	340	512	936	1,152	2,012	1,551	1,542	942	1,277
Lloydminster .....	-	-	643	498	900	851	807	374	342	877
Division No. 11 .....	27,777	40,859	48,124	38,323	40,237	60,662	72,112	68,859	84,798	80,023
Edmonton .....	27,123	40,212	46,849	36,673	37,504	56,190	69,032	60,038	71,454	67,043
Wetaskiwin .....	220	359	271	154	565	1,280	621	370	638	755
Division No. 12 .....	317	532	456	281	384	1,133	1,251	710	1,044	1,566
Division No. 13 .....	52	102	549	495	296	484	815	447	606	552
Division No. 14 .....	45	154	330	102	366	405	604	1,045	6,461	2,557
Division No. 15 .....	302	1,187	708	1,415	1,874	1,333	1,224	2,093	3,966	3,525
Grande Prairie .....	237	680	262	581	787	527	522	1,745	2,102	2,455
TOTAL ALBERTA .....	53,537	76,545	89,615	77,367	113,278	135,590	147,830	176,454	188,216	174,144
TOTAL 10 CITIES .....	48,922	70,899	82,365	68,906	103,681	118,964	135,120	156,446	153,072	142,557

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Division No. 1 .....	6,218	8,382	5,534	7,873	6,274	5,145	4,586	4,520	3,548	5,692
Medicine Hat .....	5,612	7,561	4,961	7,314	5,900	4,530	4,237	3,919	3,112	5,171
Division No. 2 .....	10,069	12,698	9,631	8,581	12,834	9,966	8,308	11,844	8,901	15,696
Lethbridge .....	7,784	9,081	7,088	6,642	9,540	6,888	5,591	7,503	4,372	12,778
Division No. 3 .....	1,371	1,617	1,589	2,353	2,349	1,728	1,787	1,816	2,773	2,543
Division No. 4 .....	523	504	380	437	351	912	700	1,330	662	628
Division No. 5 .....	1,248	1,937	1,790	1,266	2,978	2,570	1,983	7,106	4,240	6,629
Drumheller .....	213	970	872	365	1,915	1,204	339	6,212	2,711	5,162
Division No. 6 .....	112,702	115,403	78,542	81,690	93,275	103,503	103,776	135,662	119,192	141,969
Calgary .....	108,293	106,062	72,202	73,516	87,961	93,530	95,639	129,127	114,392	136,945
Division No. 7 .....	2,046	2,877	1,400	2,037	4,592	2,470	2,521	2,428	2,554	2,751
Division No. 8 .....	7,890	12,546	10,033	11,041	15,746	19,198	11,317	9,971	11,872	8,707
Red Deer .....	4,722	6,304	5,973	6,933	10,327	10,811	7,973	6,880	7,990	5,828
Division No. 9 .....	83	20	100	387	361	3,587	2,112	3,179	1,750	3,607
Division No. 10 .....	4,137	6,253	5,502	5,581	8,751	8,937	9,253	8,410	8,130	11,593
Camrose .....	1,247	2,081	2,180	1,452	4,111	2,043	2,473	1,620	3,359	4,410
Lloydminster .....	871	1,583	1,088	1,549	1,132	2,008	2,363	1,553	2,043	4,567
Division No. 11 .....	103,317	101,591	79,542	101,776	123,709	105,167	118,934	141,051	145,103	154,593
Edmonton .....	76,140	73,081	56,978	70,375	90,346	88,502	103,879	125,276	135,569	141,084
Wetaskiwin .....	548	1,205	1,370	1,933	1,684	2,106	768	2,601	941	732
Division No. 12 .....	2,191	1,549	1,621	3,389	2,849	3,064	4,254	4,448	5,777	9,170
Division No. 13 .....	964	1,458	1,447	1,276	2,278	2,305	1,892	3,171	3,180	6,273
Division No. 14 .....	2,669	1,982	1,080	1,960	2,081	1,980	8,287	5,121	2,936	4,987
Division No. 15 .....	3,019	5,173	5,232	5,232	8,666	9,731	9,889	8,870	11,363	11,106
Grande Prairie .....	1,496	2,080	2,533	2,724	4,362	3,871	2,878	3,063	3,198	2,182
TOTAL ALBERTA .....	258,447	273,990	203,423	234,879	287,094	280,263	289,599	348,027	331,990	385,944
TOTAL 10 CITIES .....	206,926	212,017	155,245	172,803	217,298	215,583	226,140	287,754	277,687	318,859



*Jasper Park Lodge attracts visitors from all over North America.*

*Edmonton's Centennial Library, with its eye-catching design, was the city's major centennial project.*





# AGRICULTURE

According to the 1966 Alberta census there are 69,411 farms or holdings each with annual sales of \$50 or more. They occupy 49 million acres of farm land. About 27.3 million acres are cultivated and utilized as follows: under crops, 17.7 million acres; cultivated pasture, 2.3 million; summerfallow, 6.7 million. About 0.6 million acres comprise the farmsteads. Of the 69,000 farms, 48,971 are regarded as commercial, each with annual sales of \$2,500 or more. In total they occupy 41 million acres.

It is estimated that 68 million acres of land in Alberta are suitable for agricultural purposes. Thirty million acres are classified as good to fair arable land and 10 million as fair to poor arable. The remainder may be cultivated and utilized as permanent pasture or hay meadow.

Alberta's agricultural resources are continuing to be developed. The rate of development will depend largely on the expansion of foreign markets for cereal grains, and on the expansion of domestic markets for meat, dairy products and other perishable commodities. It will depend as well on improved techniques of farming.

A farm industry structure with small farms predominating is evolving into one in which large farms are becoming more prevalent. Farmers recognize that to compete on narrow marketing margins, larger, more efficient economic units are essential.

Changes in industry structure are not likely to cause extensive changes in the general pattern of agricultural production already established. Farming systems and practices now in effect are reasonably well adapted to soil and climatic conditions. The south is devoted largely to cattle ranching and wheat growing on a speciality basis. The introduction of irrigation has made possible the growing of sugar beets, and other vegetables for processing and the fresh trade. Mixed farming predominates in central regions, with livestock receipts providing the greater part of farm cash income. In parts of the Edmonton and Calgary areas a large portion of the total farm livestock revenue is derived from the sale of dairy products. In the Peace River country production of forage seeds, rape, and flaxseed crops, for cash sale, is important. In recent years livestock production has become more and more important and has established an on-the-farm market for coarse grains.

Broader markets are being developed for many agricultural products. Population is increasing and consumer demand and preferences are changing. Individual incomes are rising. As this occurs per capita consumption of meats, vegetables and fruits increases.

There are many possibilities for further development of secondary industry based on agriculture. Larger markets in Western Canada will permit expansion of the production, processing and marketing of specialty crops grown in Alberta. The enlargement of the local and national market for canned vegetables may eventually increase the competitive advantage of Alberta producers and lead to a reduction in imports.

Agriculture is one of the more important industries in Alberta both in terms of value of production and in number of people employed in both primary and subsequent phases of the production process. Processing plants are well established for meat packing, flour milling, dairy products, vegetable canning and sugar refining.

Alberta's livestock production can be increased substantially. Considerable increases in Canada's meat requirements are forecast. Improved refrigerated transportation methods have resulted in an increase in the proportion of livestock processed in Alberta and will likely permit even more expansion in meat packing operations.

Higher incomes, combined with an apparent consumer preference for beef over other meats, will likely encourage a more rapid expansion of the cattle-raising industry as compared with other livestock and poultry industries. If markets for both wheat and beef cattle continue to expand, keener competition for land resources is likely to result. In time, demand in foreign markets for Canadian wheat may become sufficiently strong to induce farmers to devote land, presently used for coarse grains, to wheat production instead. The more restricted opportunity for beef cattle raising may result in a swing towards hog and sheep production.

Flour milling capacity increases slowly in relation to the growth of regional population. A growing home market may encourage the introduction of more plants producing breakfast foods, cake mixes, and other cereal grain products.

Larger and more efficient plants for processing honey, dairy and poultry products, are to be expected. The production and consumption of pasteurized milk will continue to increase with the increase in population of towns and cities. Pasteurizing plants are expected to increase in size rather than number in the larger consuming areas. "Foreign" varieties of cheeses are being manufactured and marketed in the larger cities.

Canada has been importing butter the past few years due to shortages resulting from reduction in Canadian dairy cattle herds and increased population. The shortages have occurred in the more densely populated areas of eastern Canada but could occur as well in western Canada in future years.

Artificial incubation of chicks and turkey poults has resulted in the development of the hatchery service industry.

The economies of large scale operations and labour specialization in poultry dressing plants, associated with consumer preference for oven-ready or cooked poultry meat, also has led to the growth of secondary specialized processing industries.

Animal feeds manufacturing will continue to increase due to rapid development of large-scale specialized cattle feeding operations, and rising demands from the poultry and dairy industries. Managers of large feed lots frequently install their own feed mills, which may curtail expansion of commercial feed manufacturing opportunities.

White spring wheat, commercial mustard, safflower and sunflower seeds are grown under contract in Alberta. The wheat is milled into cake and pastry flours in the

province. Plants for processing the other crops are now operating. Even though these crops are of minor volume as compared with some of the other field crops they provide an important additional source of revenue and employment in certain areas of the province. Rapeseed has become a major crop only in the last ten years and is now grown in most parts of Alberta. Rapeseed oil extraction could also be of considerable importance.

New specialty crops, and related industrial opportunities, are most likely to be introduced in southern Alberta. Higher summer temperatures, longer growing seasons, and irrigation make possible the production of many crops that cannot be grown successfully in central and northern areas. New processing plants and marketing agencies for these types of crops are either in operation or in development stages at the present time and will become more important to the agricultural industry.

Table 43 ALBERTA PRODUCTION OF  
MUSTARD, SUNFLOWER AND RAPESEED  
1962 - 1966

	Mustard pounds	Sunflower pounds	Rapeseed bushels
1962	23, 500, 000	2, 000, 000	2, 660, 000
1963	61, 200, 000	1, 538, 000	3, 560, 000
1964	23, 000, 000	2, 250, 000	5, 300, 000
1965	61, 920, 000	350, 000	9, 500, 000
1966	81, 000, 000	900, 000	11, 000, 000

Ample soils of suitable texture are available in irrigated areas for the growing of vegetable crops. Sugar beet production is already important. An increasing variety and volume of other vegetables are produced for immediate consumption and for canning. Well established ex-provincial supplies presently provide strong competition. Recent organization of grower associations and marketing cooperatives along with increased volume should help to improve the local competitive position. Varieties of canning tomatoes suited to Alberta climatic conditions have been developed but are not yet grown on a commercial scale. Progress is being made in finding solutions to problems associated with cooling and processing fresh vegetables. Improved storage methods and equipment have extended the period during which quality can be maintained for all fresh vegetables. As a result Alberta grown carrots, turnips and potatoes can now be marketed throughout the year.

In southern Alberta, new plants and warehouses have been built for grading, packaging and storing potatoes. Potatoes are processed into potato chips, french fries and granules for export. An Alberta Potato Commission has been established for the purpose of advertising and promoting the sale of Alberta grown potatoes. Since its inception expanded markets have resulted.

Horticultural practice under glass is most extensively developed at Medicine Hat. Flowers, cucumbers and tomatoes are the main crops. The possibilities of using greenhouses for starting transplants for field growth have not yet been exploited.



Table 44

FARM MACHINERY AND ELECTRIC POWER, BY CENSUS DIVISIONS  
ALBERTA - 1966

		Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
FARM MACHINERY									
Automobiles	No.	53,171	1,744	3,996	2,089	1,479	3,689	3,999	4,012
Motor Trucks	No.	85,559	3,537	8,213	3,818	3,060	6,993	6,400	6,264
Tractors	No.	112,245	3,650	9,132	4,355	3,540	6,930	7,758	8,226
Grain Combines	No.	42,838	1,671	3,224	1,540	1,507	3,512	2,715	3,541
Pick-Up Hay Balers	No.	25,161	977	1,901	1,227	945	1,514	2,000	1,989
ELECTRIC POWER									
Census-Farms Reporting	No.	56,189	1,615	4,048	2,160	1,480	3,390	4,249	4,049
		Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
FARM MACHINERY									
Automobiles	No.	5,018	88	7,634	6,984	2,466	4,383	613	4,977
Motor Trucks	No.	7,361	205	10,327	8,846	3,586	6,602	974	9,373
Tractors	No.	10,388	298	14,870	12,813	5,838	10,738	1,552	12,157
Grain Combines	No.	3,578	34	6,227	4,168	1,594	3,806	235	5,486
Pick-Up Hay Balers	No.	2,478	73	3,663	2,962	1,184	2,256	338	1,654
ELECTRIC POWER									
Census-Farms Reporting	No.	5,700	143	7,513	7,430	2,741	5,325	673	5,673

Table 45

LIVESTOCK AND POULTRY ON FARMS, BY CENSUS DIVISIONS  
ALBERTA - 1966

		Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
LIVESTOCK									
Horses	No.	93,729	3,229	6,009	7,864	5,855	5,019	12,988	7,397
Cattle	No.	3,439,734	168,029	296,614	258,708	212,495	201,599	384,896	324,252
Hogs	No.	1,092,672	11,415	68,028	39,440	8,445	53,593	77,660	58,017
Sheep	No.	301,397	22,759	53,568	83,150	10,746	10,444	20,322	6,318
POULTRY									
Hens and Chickens	No.	8,440,447	155,557	700,050	249,928	108,846	614,484	1,179,964	386,437
Turkeys	No.	951,124	11,869	89,012	27,292	1,922	172,391	84,342	16,501
Ducks	No.	91,454	2,053	15,008	15,743	3,949	8,535	5,136	4,107
Geese	No.	79,886	3,338	20,080	13,015	1,769	6,256	3,966	5,132
		Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
LIVESTOCK									
Horses	No.	8,765	1,981	9,322	7,436	5,201	4,493	1,423	6,747
Cattle	No.	352,677	20,418	396,233	289,440	136,101	228,274	33,744	136,254
Hogs	No.	151,851	1,482	170,285	161,285	84,902	137,996	8,311	59,962
Sheep	No.	26,334	1,036	7,071	15,977	7,251	19,493	5,561	11,367
POULTRY									
Hens and Chickens	No.	437,186	5,930	1,269,525	1,768,001	391,550	677,335	81,180	414,494
Turkeys	No.	14,442	138	162,059	216,154	18,223	130,959	566	5,254
Ducks	No.	4,414	11	12,607	9,596	2,760	4,896	738	1,901
Geese	No.	5,177	67	6,491	4,982	2,205	4,763	912	1,733

Table 46

CASH INCOME FROM THE SALE OF FARM PRODUCTS - ALBERTA  
1946 - 1966  
(thousands of dollars)

	Wheat	Oats	Barley	C. W. B.* Net Cash Advance Payments	Rye	Flaxseed	Rapeseed	Sugar Beets
1946	108,714	12,801	9,091		4,190	1,461		3,959
1947	128,609	20,794	22,606		11,419	7,407		5,175
1948	167,259	17,534	22,490		8,552	9,932		5,248
1949	203,416	13,697	17,522		4,653	2,648		4,892
1950	113,270	11,606	18,980		3,077	793		5,813
1951	179,293	12,892	27,858		4,478	2,143		7,065
1952	204,225	30,281	56,689		7,288	5,337		7,116
1953	187,811	20,645	53,006		3,780	4,260		6,660
1954	107,367	15,038	29,501		3,801	3,839		5,992
1955	100,231	7,562	26,778		1,901	6,341		5,905
1956	134,720	11,470	34,598		3,857	10,215		6,579
1957	116,242	8,996	28,351	4,375	1,086	14,048		8,367
1958	113,025	5,797	33,515	335	1,705	9,830	1,087	7,605
1959	121,337	4,150	36,348	792	1,326	16,706	823	5,565
1960	118,441	6,033	30,256	3,750	889	12,522	3,197	7,229
1961	140,871	11,658	31,567	5,118	1,545	13,872	8,220	6,076
1962	149,521	11,025	37,929	233	1,603	10,791	4,165	7,282
1963	143,782	10,703	32,220	6,720	1,746	7,792	4,820	13,540
1964	205,562	11,450	46,456	4,719	2,227	12,051	8,952	8,027
1965	200,415	7,656	46,773	3,442	2,301	8,713	12,871	5,675
1966	234,511	9,040	55,386	1,783	3,749	11,230	18,588	6,155
	Potatoes	Vegetables	Other Crops	Total Crops	Cattle and Calves	Hogs	Sheep and Lambs	Dairy Products
1946	1,248	1,149	6,159	148,772	48,613	47,710	2,686	19,029
1947	1,414	1,148	6,660	205,232	45,974	50,158	3,072	22,318
1948	1,496	1,440	14,413	248,364	79,612	59,828	2,766	27,852
1949	1,574	1,233	9,131	258,766	84,403	52,175	3,064	25,371
1950	1,529	1,036	8,022	164,126	93,771	49,803	3,203	24,357
1951	1,476	972	5,260	241,437	95,390	58,444	2,077	26,955
1952	2,269	1,158	7,542	321,905	72,366	55,690	2,275	26,727
1953	1,900	1,230	7,823	287,115	69,061	64,243	1,642	28,928
1954	1,547	1,016	8,225	176,326	74,391	67,848	1,638	29,431
1955	1,747	1,167	7,515	159,147	77,012	60,365	1,903	30,870
1956	1,823	1,175	11,481	215,918	85,731	59,266	2,184	31,017
1957	1,173	1,198	7,676	191,512	108,883	65,449	2,635	33,214
1958	1,121	1,142	10,977	186,139	146,419	77,483	2,741	36,170
1959	1,169	1,253	9,497	198,966	130,542	77,907	3,080	36,318
1960	2,275	1,227	8,024	193,843	142,136	60,528	2,923	38,105
1961	2,805	1,443	10,994	223,933	157,038	69,524	3,831	39,398
1962	2,999	1,563	8,806	235,917	171,213	71,138	3,182	38,998
1963	2,691	1,902	12,346	238,262	146,998	59,491	2,865	39,709
1964	3,134	1,948	10,212	305,300	151,458	63,950	2,943	41,426
1965	6,091	1,888	14,775	310,600	182,566	77,356	2,797	42,028
1966	5,848	2,530	12,152	357,406	228,342	79,571	2,651	44,682
	Poultry	Eggs	Other Livestock and Products	Total Livestock and Products	Forest Products	Supplementary Payments +	Deficiency Payments	Total Cash Income
1946	4,988	6,922	4,213	134,161	337	4,458		287,728
1947	5,190	7,932	5,946	140,590	384	1,732		347,938
1948	6,113	9,079	6,460	191,710	460	3,533		444,067
1949	6,865	8,053	5,228	185,159	447	3,360		447,732
1950	6,679	6,219	5,090	189,122	785	5,256		359,289
1951	10,839	9,156	5,200	208,061	793	4,235		454,526
1952	9,815	8,626	4,561	180,060	800	2,349		505,114
1953	10,663	11,483	4,490	190,510	807	559		478,991
1954	12,149	10,743	4,672	200,872	814	1,031		379,043
1955	9,447	12,113	5,254	196,964	821	5,776		362,708
1956	13,542	13,126	4,987	209,853	828	1,319		427,918
1957	13,317	12,505	5,200	241,203	836	905		434,456
1958	12,636	12,693	5,553	293,695	843	19,394		500,071
1959	12,961	11,671	5,978	278,457	850	7,128		485,898
1960	13,302	11,629	5,684	274,307	857	25,010	497	496,083
1961	15,402	11,725	6,520	303,438	867	8,233	446	536,917
1962	13,287	10,940	6,341	315,099	875	21,387	503	573,781
1963	16,392	10,151	7,416	283,022	880	6,895	1,149	530,208
1964	15,354	9,036	7,110	291,277	890	4,466	325	602,258
1965	15,971	9,742	9,341	339,801	900	3,967	2,063	657,331
1966	18,816	10,996	8,131	393,189	912	5,983	3,242	760,732

\* Interim and final Canadian Wheat Board Payments for wheat, oats and barley are credited to the year in which they are received by farmers. Cash advance payments on farm-stored grain minus repayments by the farmer when his grain is delivered to the elevator. If total advance payments exceed repayments, the Net Cash Advance will be positive; if not the Advance will be negative.

+ Payments made under the provisions of the Prairie Farm Assistance Act, the Prairie Farm Income plan and the Wheat Acreage Reduction programme.

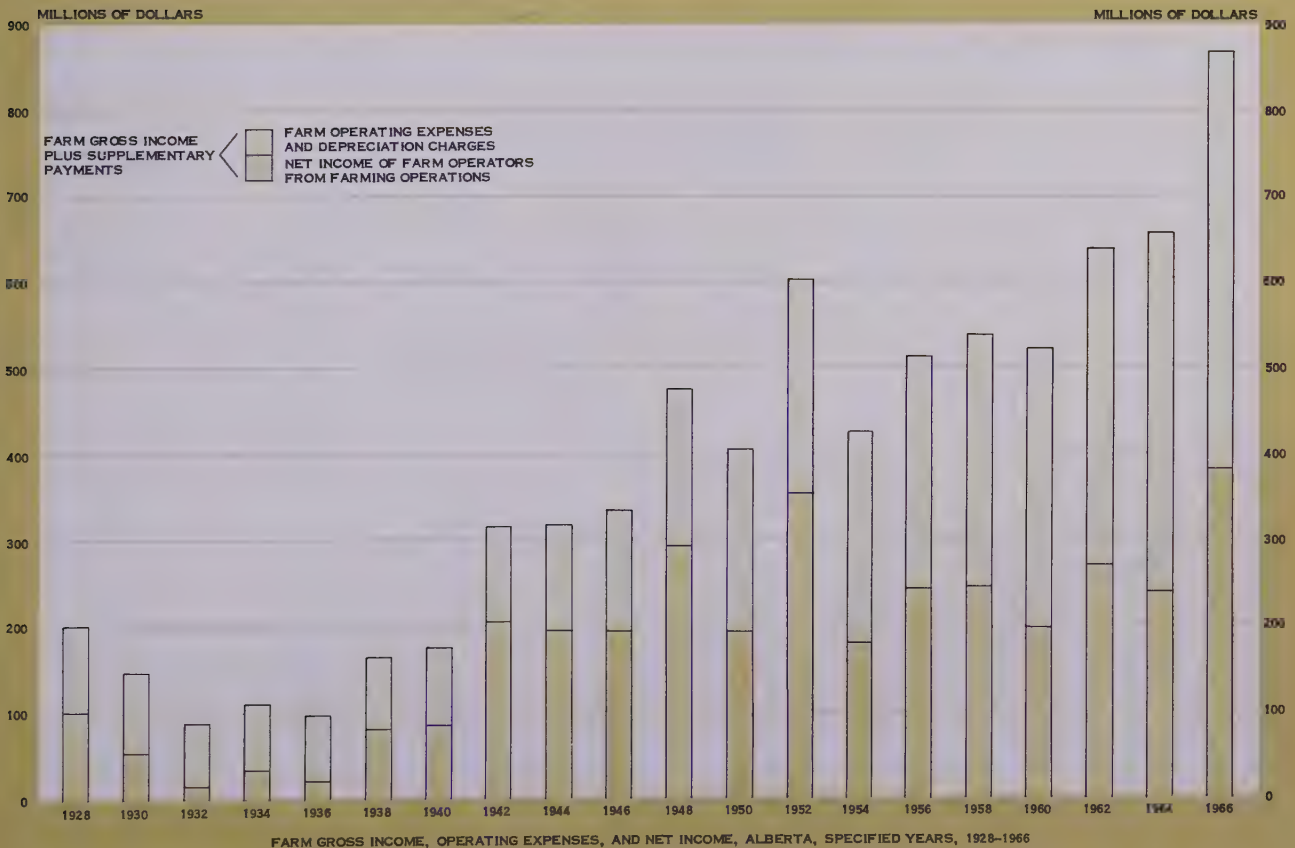




Table 47

## FARM OPERATING EXPENSES AND DEPRECIATION CHARGES

1946 - 1966

(thousands of dollars)

Year	Taxes	Gross Farm Rent	Hired Labour	Interest on Indebtedness	Total Machinery Expenses	Fertilizer and Lime	Other Crop Expenses	Feed
1946	9,602	20,869	18,037	7,146	34,769	686	4,489	11,565
1947	10,769	23,600	20,327	8,099	38,669	969	5,792	17,034
1948	12,560	23,800	20,419	8,752	46,927	1,294	5,345	20,118
1949	14,198	18,664	20,422	9,631	51,605	1,993	5,911	19,399
1950	14,822	20,756	22,975	11,027	59,080	2,409	5,705	18,452
1951	15,011	24,852	25,632	12,298	66,575	3,271	6,134	15,939
1952	15,969	25,719	26,437	13,151	72,238	2,991	6,361	13,102
1953	16,961	20,779	25,593	14,004	75,443	3,612	6,522	10,646
1954	17,479	14,383	23,776	14,256	72,738	3,000	6,704	11,682
1955	16,898	18,967	25,303	14,952	76,157	2,505	7,492	13,254
1956	17,566	20,322	26,996	14,763	80,581	2,851	9,137	13,650
1957	17,629	16,732	28,567	14,761	83,040	3,549	10,256	13,296
1958	17,847	19,738	30,261	15,371	84,988	4,565	11,049	16,037
1959	18,404	21,218	31,711	16,659	89,513	6,112	12,634	16,205
1960	19,662	24,146	33,377	17,994	90,098	6,942	12,888	15,159
1961	20,500	25,006	34,067	20,349	91,127	8,487	14,046	16,966
1962	20,900	28,012	34,378	22,964	98,150	10,588	14,382	21,907
1963	21,400	32,120	35,529	26,806	102,003	14,315	15,862	21,067
1964	21,900	31,225	35,591	29,561	105,656	20,243	17,627	24,558
1965	22,500	35,665	36,691	33,721	110,973	22,688	18,149	30,514
1966	23,000	35,280	37,280	37,675	118,186	26,649	18,959	34,395

	Other Livestock Expenses	Building Repairs	Electricity* and Telephone	Miscellaneous	Depreciation		Total Operating and Depreciation Charges
					Buildings	Machinery	
1946	1,465	2,962	85	5,506	5,491	17,964	140,636
1947	1,486	3,207	126	6,077	6,388	20,860	163,403
1948	1,387	4,010	180	6,371	7,805	25,117	184,085
1949	1,324	4,167	238	6,373	8,226	30,657	192,808
1950	1,277	4,416	328	6,437	8,461	36,928	213,073
1951	1,449	4,386	1,282	9,952	8,688	42,901	238,370
1952	1,646	4,721	1,627	10,395	8,901	46,230	249,488
1953	1,930	5,767	1,773	10,373	11,165	50,936	255,504
1954	2,113	4,739	2,069	10,349	10,269	53,629	247,186
1955	2,361	4,339	2,237	11,324	10,948	52,061	258,798
1956	2,552	5,285	2,628	11,855	11,664	51,266	271,116
1957	2,883	4,574	2,920	12,262	11,892	53,620	275,981
1958	3,125	5,222	3,294	13,274	13,564	55,732	294,067
1959	3,659	5,974	3,682	14,582	14,024	58,157	312,534
1960	3,822	6,396	4,111	14,049	15,410	61,018	325,072
1961	4,654	6,809	4,689	15,773	15,870	61,970	340,313
1962	4,579	8,041	5,112	16,802	16,803	67,164	369,782
1963	5,247	7,671	5,167	17,312	18,359	70,033	392,891
1964	5,627	8,287	5,341	18,843	20,537	73,862	418,858
1965	6,642	8,318	6,077	19,961	23,649	77,870	453,418
1966	6,597	8,961	6,494	20,993	26,761	84,659	485,889

\* Electric power only prior to 1951.

Table 48

INCOME OF FARM OPERATORS FROM FARMING OPERATIONS - ALBERTA  
1946 - 1966  
(thousands of dollars)

	1	2	3	4	5	6	7	8	9	10
	From Farm Products	Cash Income Supple- mentary Payments	Total	Income In Kind *	Realized Gross Income (1+2+4)	Operating & Depre- ciation Charges **	Realized Net Income (5-6)	Value of Inventory Change	Total Gross Income (5+8)	Total Net Income (9-6)
1946	283,270	4,458	287,728	31,032	318,760	140,636	178,124	15,792	334,552	193,916
1947	346,206	1,732	347,938	34,703	382,641	163,403	219,238	- 2,401	380,240	216,837
1948	440,534	3,533	444,067	39,804	483,871	184,085	299,786	- 6,674	477,197	293,112
1949	444,372	3,360	447,732	39,265	486,997	192,808	294,189	- 52,113	434,884	242,076
1950	354,033	5,256	359,289	39,113	398,402	213,073	185,329	7,462	405,864	192,791
1951	450,291	4,235	454,526	44,190	498,716	238,370	260,346	129,175	627,891	389,521
1952	502,765	2,349	505,114	42,967	548,081	249,488	298,593	55,998	604,079	354,591
1953	478,432	559	478,991	45,634	524,625	255,504	269,121	31,912	556,537	301,033
1954	378,012	1,031	379,043	42,107	421,150	247,186	173,964	5,864	427,014	179,828
1955	356,932	5,776	362,708	41,429	404,137	258,798	145,339	52,956	457,093	198,295
1956	426,599	1,319	427,918	42,153	470,071	271,116	198,955	44,044	514,115	242,999
1957	433,551	905	434,456	43,097	477,553	275,981	201,572	- 40,350	437,203	161,222
1958	480,677	19,394	500,071	47,206	547,277	294,067	253,210	- 6,432	540,845	246,778
1959	478,770	7,128	485,898	46,252	532,150	312,534	219,616	- 1,868	530,282	217,748
1960	471,073	25,010	496,083	49,278	545,361	325,072	220,289	- 21,190	524,171	199,099
1961	528,684	8,233	536,917	48,874	585,791	340,313	245,478	- 39,610	546,181	205,868
1962	552,394	21,387	573,781	50,864	624,645	369,782	254,863	15,608	640,253	270,471
1963	523,313	6,895	530,208	54,089	584,297	392,891	191,406	93,999	678,296	285,405
1964	597,792	4,466	602,258	57,660	659,908	418,858	241,050	- 1,261	658,647	239,789
1965	653,364	3,967	657,331	65,596	722,927	453,418	269,509	23,564	746,491	293,073
1966	754,749	5,983	760,732	70,888	831,620	485,889	345,731	38,128	869,748	383,859

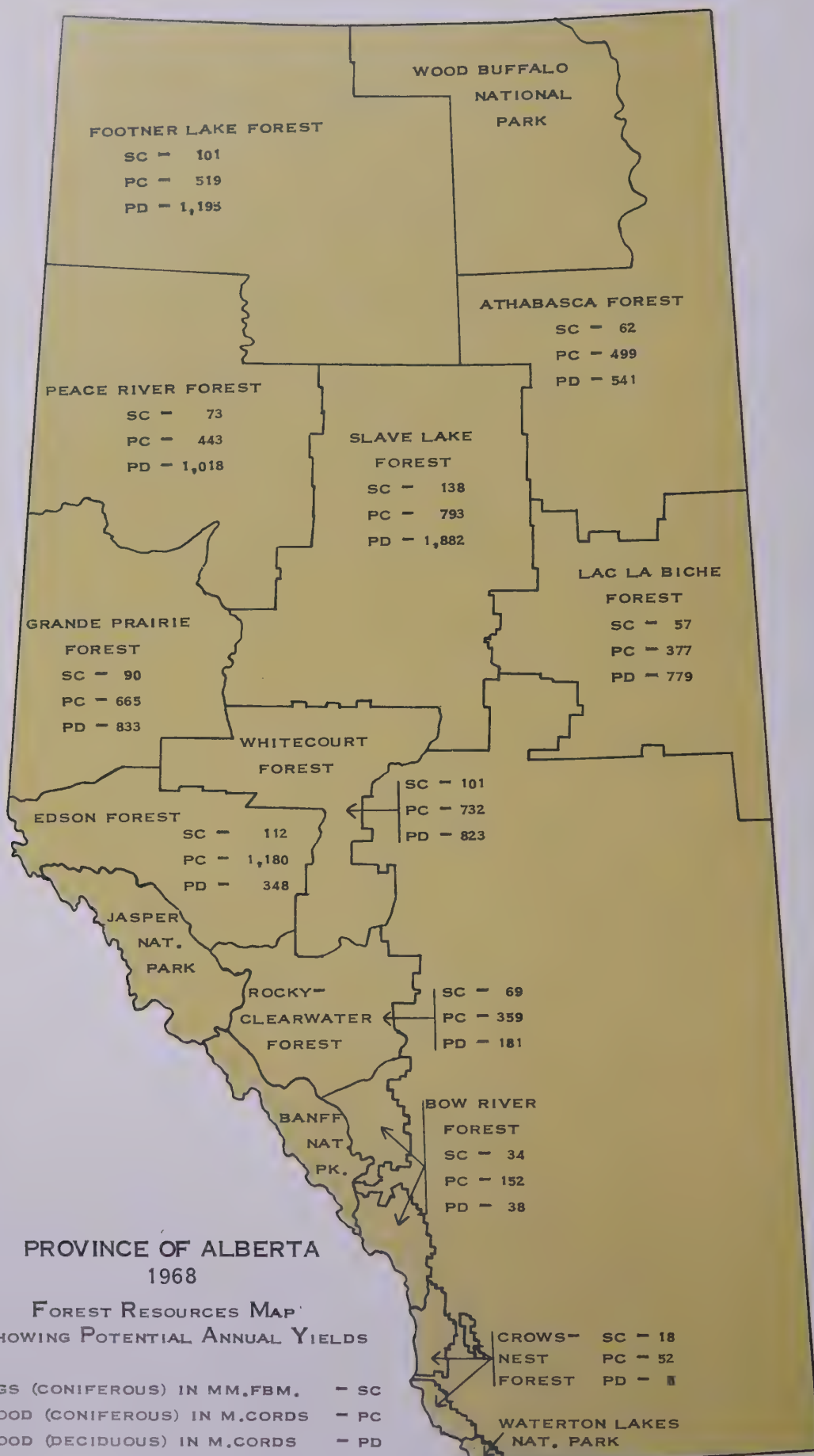
\* See Table

\*\* See Table

Table 49

FARM INCOME IN KIND - ALBERTA  
1946 - 1966  
(thousands of dollars)

	Dairy Products	Poultry and Eggs	Meat	Fruit and Vegetables	Honey	Forest Products	Wool	House Rent	Total
1946	4,533	5,423	3,728	6,280	44	1,888	20	9,116	31,032
1947	5,725	5,234	4,549	6,721	50	1,840	27	10,557	34,703
1948	7,199	5,267	5,177	7,362	157	1,770	32	12,840	39,804
1949	6,198	5,540	4,691	7,621	61	1,655	25	13,474	39,265
1950	5,453	5,094	5,293	7,031	67	1,706	9	14,460	39,113
1951	5,996	7,445	6,355	7,429	29	1,621	5	15,310	44,190
1952	5,342	6,615	5,477	8,338	28	1,536	3	15,628	42,967
1953	5,097	6,621	5,171	6,800	26	1,451	5	20,463	45,634
1954	5,233	5,836	4,414	6,010	19	1,366	12	19,217	42,107
1955	5,387	5,389	3,460	5,668	25	1,281	17	20,202	41,429
1956	5,447	5,204	3,831	4,824	24	1,195	12	21,616	42,153
1957	5,382	4,557	5,330	4,356	27	1,110	7	22,328	43,097
1958	5,723	4,698	6,339	4,031	18	1,025	2	25,370	47,206
1959	5,488	3,987	5,531	3,823	18	940	5	26,460	46,252
1960	5,586	4,248	5,641	3,786	27	855	5	29,130	49,278
1961	5,457	3,749	5,338	3,542	19	824	3	29,942	48,874
1962	5,126	4,196	5,654	3,523	18	793	3	31,551	50,864
1963	5,121	4,307	5,667	3,564	25	762	4	34,639	54,089
1964	5,042	3,696	5,157	3,903	33	731	4	39,084	57,650
1965	4,570	4,442	5,870	4,804	30	700	2	45,178	65,596
1966	4,156	4,748	6,250	4,285	30	675	3	50,741	70,888





# FORESTRY

The forests of Alberta cover almost 60 per cent of the total area of the province, or about 151,000 square miles. They contain in excess of 54 billion cubic feet of wood material. Alberta's forests rank fourth among the provinces both in terms of merchantable timber volume and productive area.

Forestry may be defined as the art, science and business of managing forest land for the continuous production of goods and services. In Alberta, the range of such goods and services of value to industry and the consumer is now considerable and definitely increasing. There is a growing realization by the public that the various categories of material goods such as water, forage, fish, wildlife, and wood are being produced at a regular and increasing rate of production in our forested area. At the same time there is also a steady increase in the appreciation of the non-material benefits of forests, such as recreational opportunities and scenery.

The forests of Alberta are a valuable renewable natural resource administered under a policy designed to ensure a sustained yield of diverse products. Growing forests for future use necessitates the expenditure of time and funds based upon overall intelligent long-range planning.

The Crown is the principal landowner in Alberta as shown below:

	<u>Square Miles</u>	<u>Per cent</u>
Private land:	89,320	35
Crown land:		
(a) Federal (National Parks, Department of National Defense, etc.)	28,626	11
(b) Provincial (Forestry, Provincial Parks, etc.)	<u>137,339</u>	<u>54</u>
	<u>165,965</u>	<u>65</u>
	255,285	100

The government in administering public lands considers itself a landlord; and, as a landlord, tries to obtain the greatest return from the land. Consequently, the government generally retains title to all its present land, mineral and forest rights. These rights in turn are leased under legislative authorization to private firms for planned natural resources development purposes. Leases, licenses and permits are subject to renewal and to special operating conditions. The main exception to the Crown policy of the retention of title to all public lands is in the gradual and orderly release of land suitable for agriculture.

The major part of Alberta's forest land is in the Boreal forest region. The Subalpine and Montane forest regions are confined to the eastern slopes of the Rocky Mountains.

The most common coniferous tree species in Alberta are white and black spruce, and lodgepole and jack pine. Less common are balsam fir, alpine fir, and larch. Deciduous species such as trembling aspen, balsam poplar and white birch are also found throughout most of Alberta.

The estimated timber volume by species is as follows:

SPECIES	Diameter Class	Volume in Cubic Feet	Per cent
Coniferous:			
Spruce, white	4" to 11"	7.4 billion	15
Spruce, white	12" and over	4.9 billion	10
Pine, jack and lodgepole	4" to 10"	8.5 billion	18
Pine, jack and lodgepole	11" and over	2.4 billion	5
Spruce, black	4" and over	1.5 billion	3
Fir, balsam	4" and over	1.0 billion	2
Deciduous:			
Poplar and birch	4" and over	23.0 billion	47
TOTAL		48.7 billion	100

The 151,000 square miles of forested area has been classified as 63,000 timbered, a further 42,000 which will be suitable in time after the old and recently burned over areas are restocked, and about 46,000 of muskeg, bushland and generally unsuitable terrain.

Of the 63,000 square miles presently forested, approximately 36 per cent are covered with coniferous trees, 29 per cent with deciduous trees, and 35 per cent with coniferous and deciduous intermixed.

Forest Management Units are areas reserved for the production in perpetuity of forest products. About 128,000 square miles of forest area are now subdivided into management units.

FORESTS	In Management Units square miles	Outside Management Units square miles	Total Area square miles	Percent of Total Forest Area
Crowsnest	1,354.54	-	1,354.54	.90
Bow River	3,168.95	124.12	3,293.07	2.19
Clearwater-Rocky	6,227.53	423.04	6,650.57	4.41
Edson	9,000.05	152.24	9,152.29	6.07
Whitcourt	7,662.38	1,227.08	8,889.46	5.89
Grande Prairie	7,123.52	3,607.56	10,731.08	7.11
Peace River	13,061.74	3,993.19	17,054.93	11.30
Footner Lake	28,383.87	3,168.97	31,552.84	20.91
Slave Lake	19,525.50	2,269.79	21,795.29	14.45
Lac La Biche	9,454.28	3,604.78	13,059.06	8.65
Athabasca	23,305.02	-	23,305.02	15.45
Metis Colonies		2,011.07	2,011.07	1.33
Air Weapons Range		2,023.85	2,023.85	1.34
TOTAL	128,267.38	22,605.69	150,873.07	100.00

The forests of Alberta represent not only a tangible source of income from wood production and domestic grazing but include many times the value of that income in the less tangible benefits derived from watershed management, from providing a habitat for wildlife, and from use as a recreational playground. As population increases so will the value of these benefits increase. Wise multiple and co-ordinated use-management, including intelligent long-range planning of the forest lands, ensures continuing benefits.

Table 50  
ANNUAL VOLUME OF FOREST PRODUCTION, ALBERTA  
1957 - 1967

		1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	10 Year Average
Lumber - all species	MM f. b. m.	300	367	386	243	288	314	381	319	309	290	320
Plywood logs, coniferous	MM f. b. m.	3	6	12	11	20	23	31	18	20	56	20
Plywood logs, deciduous	MM f. b. m.	5	11	14	8	13	14	22	11	13	12	12
Round timber, Poles, Piling Posts	MM lin. ft.	11	11	14	23	20	29	38	28	23	23	22
Pulpwood	M cords	242	214	258	327	271	283	300	390	379	379	304
Fuelwood	M cords	12	13	10	20	8	13	7	3	5	4	9
Railway Ties	M pieces	1,586	959	798	420	211	634	659	393	432	443	653
TOTAL	M cu. ft.	89,338	97,040	104,869	81,560	85,315	95,363	112,103	105,114	101,628	104,747	97,707

The most significant post war event in the forest products industry was the establishment in 1956 of the sulphate pulpmill at Hinton. Prior to that date, lumber manufacture accounted for some 85 per cent by volume of the total forest production of the province. With the increase in production of pulpwood, plywood and round timbers, lumber volume is now down to approximately 55 per cent.

Table 51  
REFORESTATION - ALBERTA  
1957 - 1967

Year	Acres Scarified	Acres Seeded	Seed Collected lbs.	Acres Thinned	Seedlings Planted
1957-58 .....	522				3,000
1958-59 .....	1,851		322		10,000
1959-60 .....	2,551	115	2,125		35,000
1960-61 .....	5,964	1,145	3,851		24,000
1961-62 .....	10,013	3,475	6,672		125,000
1962-63 .....	10,688	7,900	1,540		173,000
1963-64 .....	9,015	8,242	325	281	261,000
1964-65 .....	10,478	6,770	4,361	1,005	325,000
1965-66 .....	18,495	11,141	221	715	701,000
1966-67 .....	17,902	13,001	444	600	876,000

Three additional pulpmill complexes will probably be established before 1980. Daily capacity of each is expected to be over 500 tons per day (basis of 2 cords per ton of pulp) with provision for doubling production with timber from optional pulpwood reserve areas. One of these complexes has been announced for the Whitecourt area. Two other attractive areas being assessed at present are near Grande Prairie and Rocky Mountain House.



An interested firm may obtain authorization to examine any area reserved for pulpmilling. Such a firm must provide confirmation that it is financially able to construct and operate a pulp mill of at least 500 tons daily capacity. It is required to divulge the results of its surveys and feasibility studies. It must outline proposals concerning the management, on a sustained yield basis, of the lease area and also on the integration of diverse product lines to utilize the forest resource to the fullest economic extent. In considering all briefs, the Minister of the Department of Lands and Forests arranges for public hearings in each area. A Forest Management Agreement may then be drafted, finally subject to the approval of the firm and the government.

Legislation now in effect authorized implementation of the timber quota system of management. Under this system, the volume of coniferous timber in a management unit is shared among qualified quota holders. The system provides for periodic harvesting while maintaining the balance between forest growth and depletion. Timber quotas have been established for approximately 60 per cent of the forest management units in the Province. The total annual harvestable timber volume now allocated to the eleven Forests amounts to 450.6 million board feet of lumber, 11.2 million lineal feet of round timbers and 1.4 million cubic feet of pulpwood. Allowable annual cuts of 375,000 cords of pulpwood and 46.4 million boardfeet of lumber and plywood have also been established for the lease areas of North Western Pulp and Power Ltd. and North Canadian Forest Industries Limited respectively. Timber quotas will be calculated for the remaining forest management units in the province as access into these units improves and present quota cuts are utilized.

With the implementation of the sustained yield policy in the forest management lease and timber quota areas, reforestation is an important responsibility delegated to lessees and quota holders. Regeneration requirements have been set and surveys must be conducted on denuded forest lands. All areas found to be below the minimum stocking standards must be restocked within a short term.

The basic requirement for sustained yield management is the protection of the basic resource by constant restocking to produce in perpetuity an equal or increasing volume of forest products. In comparison with the other provinces of Canada, Alberta has been very progressive in practical forest management through strict implementation of the sustained yield policy.

Table 52 FOREST PRODUCTION, BY VOLUME AND VALUE, ALBERTA, 1966 - 1967

Products	Volume	Unit	Product Value \$
Lumber	289,609	M f.b.m.	16,811,794
Pulpwood	378,781	cords	6,628,667
Plywood Logs, coniferous	56,305	M f.b.m.	2,533,742
Round Timber	23,497,880	lin.ft.	939,915
Railway Ties	443,209	pieces	908,578
Plywood Logs, deciduous	11,853	M f.b.m.	355,577
Lath	2,572,150	pieces	102,886
Fuelwood	3,662	cords	18,310
Christmas Trees	27,127		13,563
Mine Ties	6,068	pieces	3,034
Shingle Bolts	56	cords	980
Transplanting Trees	1,269		634
Slabs	223		446
Total Value			28,318,126



*Alberta's vast timber stands have barely been tapped.*

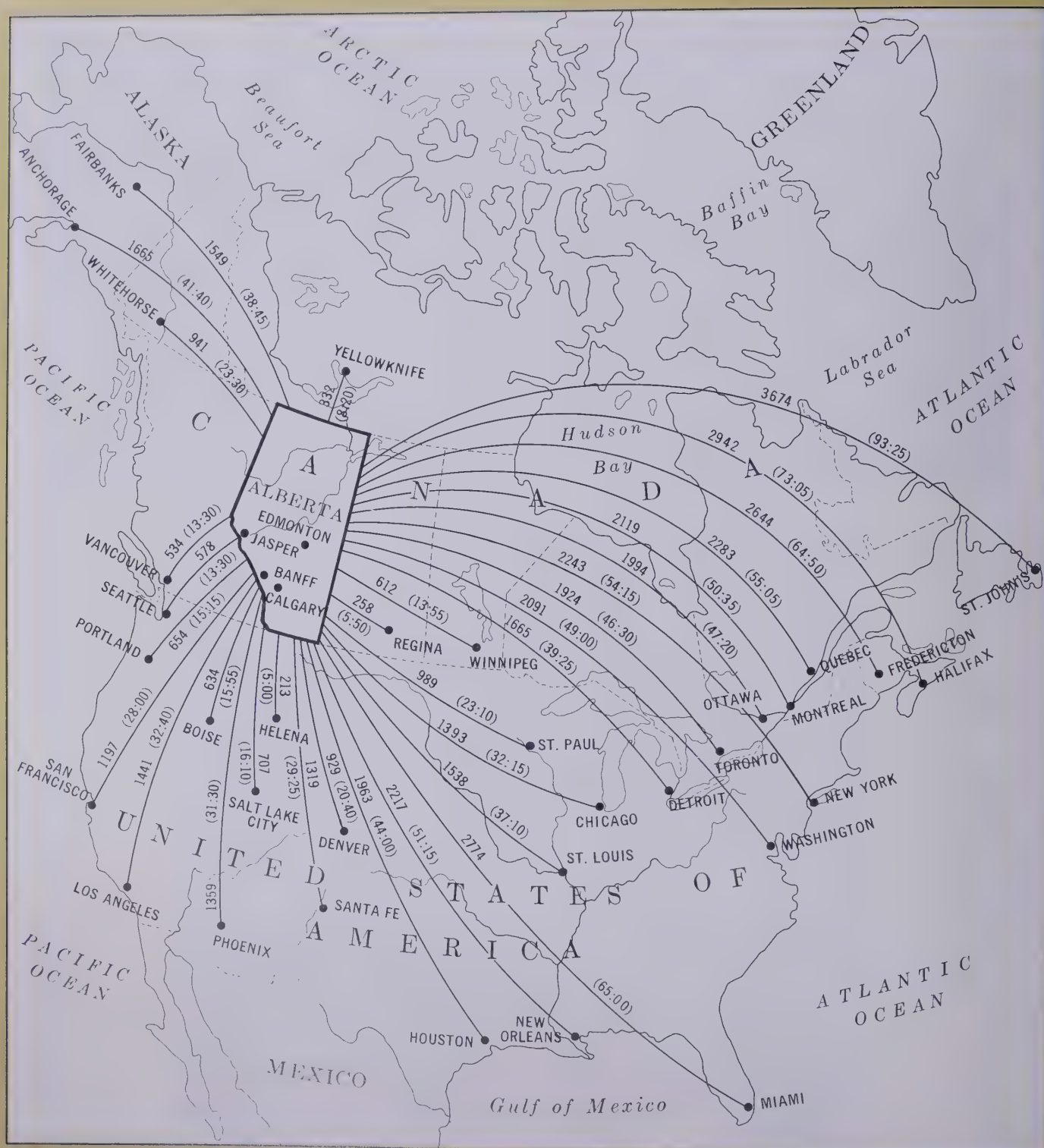


*Visitors to Jasper National Park find the rugged beauty of Sunwapta Falls a high point of their picture-taking tour.*



# MILEAGES AND AVERAGE DRIVING TIMES FROM PRINCIPAL CENTRES IN NORTH AMERICA TO THE ALBERTA BORDER

Average driving times are in brackets.





# HIGHWAYS

The provincial and municipal governments have carried on an active program of road improvements. The table below shows the comparative mileage of various types of roads in Alberta in 1962 and 1966. During this period an additional 927 miles of roads and highways have been paved. This is an increase of 24 per cent.

Table 53 MILEAGE - HIGHWAYS AND ROADS, ALBERTA  
1962 and 1966

		<u>Unimproved</u> miles	<u>Graded</u> miles	<u>Gravelled</u> miles	<u>Pavement</u> miles	<u>Total</u> miles
Primary Highways:						
	1962	52	-	2,316	3,826	6,194
	1966	26	19	2,018	4,551	6,614
District and Local Roads:						
	1962	21,591	16,503	46,036	58	84,188
	1966	20,469	13,463	52,449	221	86,602
Access Roads:						
	1962	-	-	80	27	107
	1966	-	-	85	66	151
Total						
	1962	21,643	16,503	48,432	3,911	90,489
	1966	20,495	13,482	54,552	4,838	93,367

Primary highways are the responsibility of the provincial government. They are the highways of provincial or national importance whose main function is to link major centres of population or traffic. Another function is to provide a certain level of access service to all areas of the province.

Since the highway network was established many years ago, emphasis has been placed on the upgrading and improvement of existing highways, with priority being given the heavy traffic routes. The improvements have taken the form of widening, decreasing grades, eliminating curves, and improving surfaces for better load-bearing characteristics. Additions, such as the new highway to Fort McMurray, have been made as the need arises. This program of improving the highway network by increasing traffic capacity and upgrading to new standards is a continuing one.

District roads are of regional or inter-regional importance. They connect rural areas and smaller centres to larger centres and to highways. Their main function is to provide rural areas with a good consistent level of rural access service. They are the administrative responsibility of local municipal governments. In the absence of a local government, (that is, in the Improvement Districts), responsibility for these roads rests with the Department of Highways.

The function of local roads is to provide access service for areas with very low traffic volumes. They, too, are the responsibility of the local municipal governments.

Access roads perform one of the functions of district roads in that they provide access from small urban centres to highways. Unlike the local roads, the Department of Highways accepts the responsibility for these access roads.

As a result of studies carried out in 1966 and 1967, the provincial government

...tion in 1968 of a major long-term program of road construction and improvement in the rural areas to be carried out jointly by the provincial and municipal governments. Implementation of this program will bring about a change in the present system of classifying roads and highways. This change will be most notable in the present district road classification. The most important of these will become the proposed Secondary Road System. The remainder will be known as local roads. Changes will also be made in the present primary highways category.



# MOTOR VEHICLES

In 1961, 509,000 motor vehicles were registered in Alberta. By 1967 this figure reached 695,000 or 57 motor vehicles for every 100 persons.

The following table shows the distribution of motor vehicles within the province.

Table 54 AUTOMOBILE REGISTRATIONS BY CENSUS DIVISIONS,  
ALBERTA, APRIL 1, 1966 - MARCH 31, 1967

	Passenger	Trucks	School Buses Trailers Motorcycles etc.	Total
Census Division 1	11,892	5,494	2,035	19,421
Medicine Hat	8,679	2,346	1,428	12,453
Census Division 2	24,254	13,360	4,468	42,082
Lethbridge	13,020	3,524	2,443	18,987
Census Division 3	7,313	5,588	1,469	14,370
Census Division 4	3,416	3,539	567	7,522
Census Division 5	9,765	8,871	1,788	20,424
Drumheller	1,815	925	331	3,071
Census Division 6	129,808	29,326	21,985	181,119
Calgary	119,208	21,152	20,312	160,672
Census Division 7	11,014	8,829	1,811	21,654
Census Division 8	23,730	12,597	4,401	40,728
Red Deer	9,345	2,587	1,830	13,762
Census Division 9	5,452	1,814	1,013	8,279
Census Division 10	18,892	13,697	2,786	35,375
Camrose	3,087	1,126	615	4,828
Lloydminster	1,626	874	424	2,924
Census Division 11	151,216	40,584	27,154	218,954
Edmonton	127,978	28,211	23,332	179,521
Wetaskiwin	2,541	1,131	427	4,099
Census Division 12	10,378	6,080	1,806	18,264
Census Division 13	9,543	8,678	1,514	19,735
Census Division 14	5,179	3,087	1,047	9,313
Census Division 15	17,876	16,098	3,446	37,420
Grande Prairie	3,689	1,709	925	6,323
Total Alberta	439,728	177,642	77,290	694,660



Other than those whose operations are limited strictly to urban areas, there were 166,950 trucks registered in the province in 1965. These trucks carried approximately 1,453 million net ton-miles of rural and inter-city cargo within the province, an average of 12,400 net ton-miles per truck. This average is heavily weighted downward by private inter-city and farm trucks.

The average net ton-miles of cargo carried by trucks operating for compensation was 120,500. The relatively large number of private inter-city and farm trucks travelled more miles but carried fewer tons.

In view of the general economic growth of the province and the program of improving and upgrading existing roads and highways, the volume of goods carried by truck transport between points in the province should continue to show increases.

No rate schedule governing truck freight charges has been imposed in Alberta. Competition among the various trucking firms is very keen.

Restrictions are imposed on length, gross weight, and per-axle weight, of vehicles. Any firm contemplating the use of truck transport for its supplies or products should determine the restrictions in force on regional roads and highways prior to plant site selection. These restrictions become important when a firm must ship over two or more different classes of roads. As the restrictions vary according to the class of road, the maximum allowable weight of each truckload is determined by the lowest class of road to be used. Detailed information can be obtained from the Highway Traffic Board, Department of Highways, Highways Building, Edmonton, Alberta.

Fuel consumption by the motor transport industry in 1964 was 83 million gallons of gasoline, 13.1 million gallons of diesel oil and 0.5 million gallons of other fuels. Average miles per gallon for trucks using gasoline was 8.8, diesel trucks 5.7 and those using other fuels 9.4.

"Piggyback" operations, whereby truck trailer units are carried by railways on inter-city routes, could reduce inter-city, for-hire truck movements drastically. The degree of utilization depends on many factors such as relative cost, scheduling of trains and availability of truck-tractors. These factors vary with individual trucking companies. Some firms may use their tractor units for local delivery only and use the piggyback service for the longer inter-city hauls. Other firms might use the railways during peak periods. Generally, the cost of hauling a trailer unit on the highways, or shipping such a unit on a railway flatcar, are comparable for the "for hire" trucking firms. The relative cost advantages to the individual trucking operator depend, in large part, on the condition of his equipment.

Trucks owned by firms which ordinarily transport their own raw materials or products are not eligible for the piggyback rate. There are indications that these firms may be able to obtain this rate in the future as is the prevalent practice in the United States.

The scheduling of freight service will also affect the use of piggyback. If railway schedules are favourable to trucking firms, they may be more inclined to use the

railways. If the schedule is unfavourable, they will utilize their own equipment.

Piggyback services can also be used as a means of transporting fully loaded units between two centres when such units exceed the maximum allowable weight on the roads and highways between the centres. In this way the full capacity of the trailer is used.

It is expected that the new National Transport Act will strengthen the competitive position of trucking firms on short haul routes up to 300 miles and on relatively low volume freight traffic routes. The Act will make obligatory equal rail rates for piggyback service as between railway-owned trucking subsidiaries and independent trucking firms: this equalization is now voluntarily in effect. Federal rail subsidies are expected to be completely phased out by 1974. Exceptions may be made on uneconomical rail lines, retained as a matter of public policy.



*A downtown view of Calgary — city of the foothills.*



# RAILWAYS

Alberta is served by five railway companies, the Canadian National Railways, Canadian Pacific Railway, Northern Alberta Railway, the Alberta Resources Railway, and the Great Slave Lake Railway.

The Canadian National serves the cities of Edmonton, Drumheller, Camrose, Calgary, Red Deer and Lloydminster. Medicine Hat, Lethbridge, Edmonton, Calgary, Red Deer, Wetaskiwin, Lloydminster and Camrose are served by the Canadian Pacific Railway. Both the Canadian National, with its mainline running through Edmonton, and Canadian Pacific, with its mainline passing through Calgary, have major terminals at Montreal and Vancouver. The Canadian National also has a mainline terminating at Prince Rupert, British Columbia. These three centres are all ocean ports. As such, they provide an important link in the transportation of goods to world markets.

The Northern Alberta Railway, owned jointly by Canadian National and Canadian Pacific, provides service from Edmonton to Grande Prairie and Peace River in the northwest, and to Fort McMurray in the northeast.

The Alberta Resources Railway Corporation, a Crown corporation, was established in 1965. Its primary purpose is to accelerate the development of the important natural resources in the area between the Canadian National Railways mainline near Jasper and the Grande Prairie section of the central Peace River District. The resources in this area include coking coal, gypsum, pulpwood, petroleum, natural gas and sulphur, several of which are now being developed. The Solomon (Jasper) - Grande Cache section was completed in 1967 with construction of the section from Grande Cache to Grande Prairie completed in 1968.

The Great Slave Lake Railway, linking Peace River and Pine Point, N. W. T., is now in use. This line, built by Canadian National with federal government assistance, will be an important factor in the economic development of the area through which it passes.

The structure of freight rates is of prime concern to firms operating in western Canada. Some may find the structure to their benefit. Provided raw materials are obtainable locally, freight rates become a form of protection from competitive products manufactured in eastern Canada. When raw materials must be brought in, it is often found that they cost more delivered in Alberta than do eastern manufactured products. To industries serving continental or world markets, the cost of transporting Alberta raw materials to a distant point for processing as compared with the cost of moving finished or semi-finished goods will be factor in arriving at a plant site decision.

Special freight charges on raw materials and finished products can be negotiated with the railroads. Manufacturers would be well advised to negotiate prior to initiating plant construction. At an early stage, more favourable shipping rates can often be arranged since at that time there is a possibility of the railway company losing an account to either competitive Canadian or U. S. railways, or to trucking interests.



In cities served by two or more railways, users may be required to pay inter-switching charges, the costs of the transfer of freight cars from a line of one railroad to that of another. No charges are levied for transfer to points within four track miles of the interchange point. Beyond this distance interswitching class rates, special switching rates or local rates apply. These charges are subject to negotiation and should be agreed on with the carrier before a final decision is made on plant location. For assistance and further information write to the Alberta Freight Bureau, Government of Alberta, Centennial Building.



*The construction path of the Alberta Resources Railway as it crosses the Smoky River in western Alberta.*

# AVIATION

Prior to 1921, flying activity in Alberta consisted mainly of aerial displays by barnstorming ex-World War I pilots at summer fairs and exhibitions. With the discovery in 1921 of oil at Fort Norman in the Northwest Territories, the airplane proved its value in northern operations by quickly transporting men and materials into areas that were not readily accessible otherwise. Commercial air transport then began to grow as companies were formed to haul freight, passengers, and mail. This was the beginning of the famed "bush pilot" era in Canadian aviation.

Increasing commercial air transport activity continued until the 1930's, the years of the Great Depression. During those years commercial flying remained relatively stagnant as economic activity slowed and government air mail contracts were cancelled except for the far north areas.

In 1939, emphasis shifted from commercial to military flying and pilot training. The province became a link in the ferrying of aircraft from the United States to Alaska and Russia. Training of air force recruits from many Allied nations took place at various stations in south and central Alberta. Air bases were constructed for pilot training at centres such as Bowden, Penhold, Claresholm, Vulcan, Namao (north of Edmonton), and Lincoln Park in Calgary. These bases were particularly suited for training because of the flat surrounding terrain and generally good flying weather.

With the development of more versatile and larger airplanes after the war, aviation has become an increasingly important part of the economy of Alberta, providing a vital transportation service for some of the more remote centres in Alberta and the north, and aiding in the exploitation of the province's natural resources.

Table 55 AIRLINE PASSENGER ARRIVALS AND DEPARTURES, CANADIAN POINTS SPECIFIED CENTRES IN ALBERTA, 1960 - 1966

	1960	1961	1962	1963	1964	1965	1966
Calgary	203,020	231,910	220,275	230,355	259,570	317,460	383,610
Edmonton	218,875	252,135	248,260	247,955	275,865	258,050	428,810
Fort McMurray	5,270	4,100	4,520	5,080	12,020	24,590	40,065
Grande Prairie	8,830	9,750	9,205	9,355	10,130	9,930	10,375
Lethbridge	13,190	11,315	10,100	8,435	8,235	9,245	9,510
Peace River	855	1,610	2,550	2,355	3,865	5,625	12,175
Medicine Hat	2,530	2,195	1,905	915	-	-	-

There are 39 licensed airports and five licensed seaplane bases. In addition, there are a large number of unlicensed airports, varying from grass to well tarmacked landing fields.

Unless commercial operations are conducted, or it is used regularly on a scheduled run, an airport does not require a license from the Department of Transport. In either of such cases, the airport must conform to Department of Transport standards.

Table 56 ESTIMATES OF AIR CARGO LOADINGS AND UNLOADINGS, EDMONTON, CALGARY AND LETHBRIDGE, 1963-1966 (tons)

	1963		1964		1965		1966	
	Loading	Unloading	Loading	Unloading	Loading	Unloading	Loading	Unloading
Edmonton Industrial	1,562	229	2,051	372	3,127	498	2,406	360
Edmonton International	567	1,695	673	1,671	741	2,784	884	3,362
Calgary International	454	1,539	524	1,755	598	2,151	722	3,281
Lethbridge	12	69	14	94	15	103	18	91



An indication of the volume of air freight handled at the main Alberta airports by regularly scheduled airlines is given. Not included are charter and military operations.

Three major domestic airlines, Air Canada, Canadian Pacific Airlines and Pacific Western Airlines serve the province with scheduled regional, national and international passenger and air freight service. In addition, two United States carriers, Western Airlines and West Coast Airlines, provide direct flights from Calgary to United States points.

Table 57

AIRCRAFT LANDINGS AND TAKE-OFFS,  
SELECTED ALBERTA AIRPORTS, 1962 - 1966

	1962	1963	1964	1965	1966
Calgary International	117,121	142,066	140,133	163,276	206,088
Edmonton Industrial	146,292	141,196	142,191	166,831	190,272
Edmonton International	19,216	20,233	24,034	26,280	29,272
Lethbridge	21,850	21,217	28,404	24,258	43,596
Fort McMurray	3,186	3,478	4,483	5,684	4,743
Grande Prairie	5,161	5,298	6,500	6,907	12,606
Lac La Biche	387	1,112	477	562	827
Medicine Hat	4,376	7,046	10,361	7,041	8,440
Peace River	2,078	2,862	4,257	8,366	13,847

In 1966, there were 28 locally based firms providing air charter services. These firms perform a variety of functions including aerial surveys, pipeline inspection and transportation of men and supplies. The versatility of the equipment used by these firms is enhanced through the use of pontoons and skis, enabling flights to be made to almost any area of the province at any season.



*The Edmonton International Airport surrounded by fertile farm land.*



# WATER TRANSPORT

Water transportation in Alberta is restricted by geography and economics to the Athabasca and Slave Rivers. These rivers provide a water route for freight from Fort McMurray to Hay River on Great Slave Lake, and along the MacKenzie River to Tuktoyaktuk on the coast of the Arctic Ocean, a total distance of approximately 1,700 miles. With the routes which branch out of the three principal lakes, Athabasca, Great Slave and Great Bear, there are an estimated 2,770 miles of navigable water.

The importance of water transport along this route has been declining. The completion of the all-weather MacKenzie Highway from Grimshaw to Yellowknife, N.W.T., and the Great Slave Lake Railway from Peace River to Pine Point, N.W.T., has been a major reason for the decline of shipping, at least on the Fort McMurray - Yellowknife portion of the route. Both alternatives provide year-round routes to Great Slave Lake. In addition, the depressed market for uranium caused the closure of some of the mine sites in the Beaverlodge area of Saskatchewan. These sites were normally supplied through Fort McMurray.

Other factors contributing to this decline have been the completion of construction of mine campsites, and the completion and abandonment of the Distant Early Warning (D.E.W.) line sites. Water transport has also been affected by a drop in air freight rates and the shorter delivery time offered by the airlines serving the north.

Shipments of freight by water out of Hay River have not decreased as rapidly as those out of Fort McMurray. The major reason is that air transportation is the only alternative to water transportation along the MacKenzie River. Since the rates for rail and water transportation are lower than those of air freight, the volume of shipments along the MacKenzie has remained more stable.

The Great Slave Lake Railway is still under construction and current freight rates on this route cannot be taken as showing normal or permanent rate relationships.

Air freight is increasing as new types of aircraft, with lower net operating costs, greater payloads and improved landing and take off characteristics, become available, and as better equipped landing fields become more numerous. As the

railway and new road systems more effectively become the routes for bulk cargoes the relative importance of water transportation will further decline.

Table 58 WATER FREIGHT MOVEMENTS  
1960 - 1966

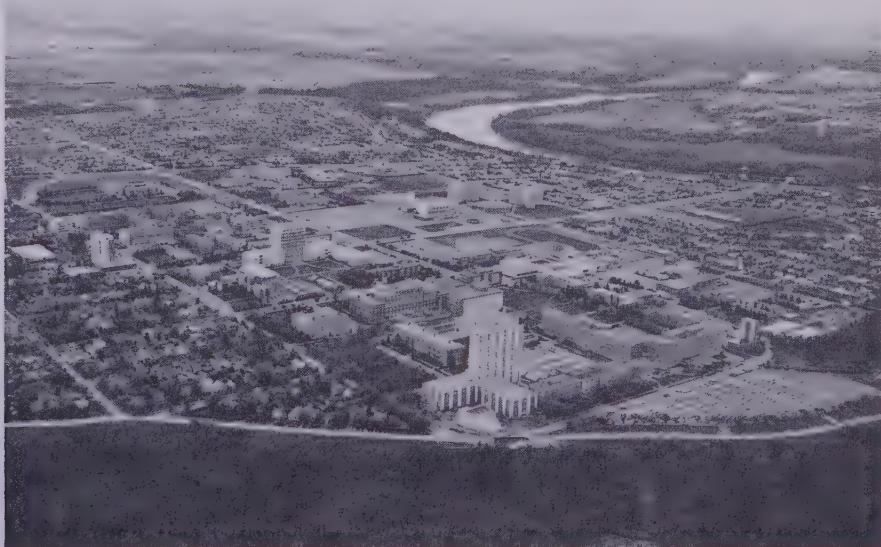
	Originating		
	<u>McMurray</u> tons	<u>Hay River</u> tons	<u>Total</u> tons
1960	85,077	39,202	124,279
1961	25,759	39,830	65,589
1962	62,235	37,176	99,411
1963	61,699	38,465	100,164
1964	60,748	47,883	108,631
1965	54,156	40,574	94,730
1966	43,280	33,334	76,614
	Terminating		
1960	16,650	18,946	35,596
1961	11,096	15,559	26,655
1962	13,941	22,115	36,056
1963	12,534	27,698	40,232
1964	13,604	22,076	35,680
1965	8,074	8,829	16,903
1966	11,541	8,753	20,294

*The Northern Alberta Institute of Technology in Edmonton offers thorough training in numerous trades and crafts.*



*Nikka Yuko Gardens — Japanese-style gardens at Lethbridge.*

*The University of Alberta campus encircled by the North Saskatchewan River.*





# COMMUNICATION MEDIA

Seven daily and over 100 weekly English-language, foreign-language and religious newspapers serve the residents of Alberta. The seven dailies have a circulation of approximately 290,000.

Of the 27 radio stations, 23 broadcast on the standard commercial frequencies. The remaining four are FM stations. Approximately 374,000 of 383,000 households have radios.

More than 350,000 households have television sets. They are served by eight television stations and 25 rebroadcast stations.

Over 599,000 telephones are in use. Of these, 390,000 are owned by the Alberta Government Telephone System, 32,000 by rural mutual companies and 177,000 by the City of Edmonton. Direct Distance Dialing is available to 80 per cent of the telephone subscribers. The rural mutual telephone companies, farmer owned, are gradually being phased out and their operations taken over by the Alberta Government Telephone System as the \$60 million underground cable installation program progresses.

Teletypewriter exchange service is available from two companies: Alberta Government Telephones' TWX service and Canadian National - Canadian Pacific Telecommunications' TELEX service. Both systems provide teletypewriter exchange service throughout North America, with connections to Europe. TWX transmissions use the telephone communications system while TELEX is carried over the telegraph networks. There are 1,559 subscribers to the TELEX network and 171 subscribers to the TWX system.

Radio-telephone terminals provide mobile telephone service throughout the populated areas of the province.

Telegraph service, operated by Canadian National - Canadian Pacific Telecommunications, is available in most centres.

The microwave network extends to most areas of the province. Part is owned by Alberta Government Telephones and part by Canadian Pacific - Canadian National Telecommunications. The portion owned by Alberta Government Telephones is part of the Trans-Canada Telephone System. The portion belonging to Canadian National - Canadian Pacific Telecommunications is part of a nationwide network.



*The Alberta Resources Railway when completed will open a vast new region to development.*



## PERSONAL INCOME

Personal income trends are considered to be relatively reliable indicators of economic activity. Because personal income data have been compiled on a provincial basis for over thirty years historical interprovincial comparisons and growth patterns of individual provinces are readily available.

Included in personal income are all receipts of wages, salaries and supplementary labour income (excluding employer and employee contributions to social insurance and government pension funds); military pay and allowances; net income of non-farm unincorporated business; interest, dividends and net rental income of persons; and transfer payments (excluding interest).

Since 1947, Alberta has ranked fourth among the provinces in total personal income per year. In 17 of the 20 years the province ranked third behind Ontario and British Columbia in per capita personal income. Alberta total personal income has risen steadily, increasing five-fold in the past 20 years and doubling in the past decade. From 1957 to 1966, total personal income rose from \$1,660 million to \$3,243 million at a cumulative annual growth rate of 7 per cent. During the same ten years, Alberta population rose from 1,164,000 to 1,464,000 — a cumulative annual growth rate of only 2.3 per cent. Had the two variables grown at the same rate, personal income per capita would be constant. In fact, per capita personal income has increased from \$1,431 to \$2,215 at a cumulative annual growth rate of 4.5 per cent. Part of the rise can be attributed to price increases which inflate the figures. It nevertheless remains that in real terms personal income has been rising faster than population, indicating a rising standard of living.

While total personal income has increased steadily during the past 20 years, interesting trends in income distribution have developed. Between 1947 and 1956, wages, salaries and supplementary labour income, as a percentage of total personal income, increased from 44 per cent to 59 per cent and then held steady between 58 per cent and 60 per cent to 1966. During the same periods, farm operators' proportion of net income decreased from 29 per cent of the total to 17 per cent during the first decade and then decreased further to 13 per cent by 1966. Transfer payments have exhibited steady growth, in both dollar value and as a per cent of total personal income. In 1956 and 1966, the respective values were \$121 million (7 per cent) and \$400 million (12 per cent). The proportion of the total of personal income received through agriculture has diminished significantly in the past 20 years: yearly fluctuations in agriculture production are much less severe in impact on the provincial economy.



*Edmonton's thermal power plant is fired by natural gas.*

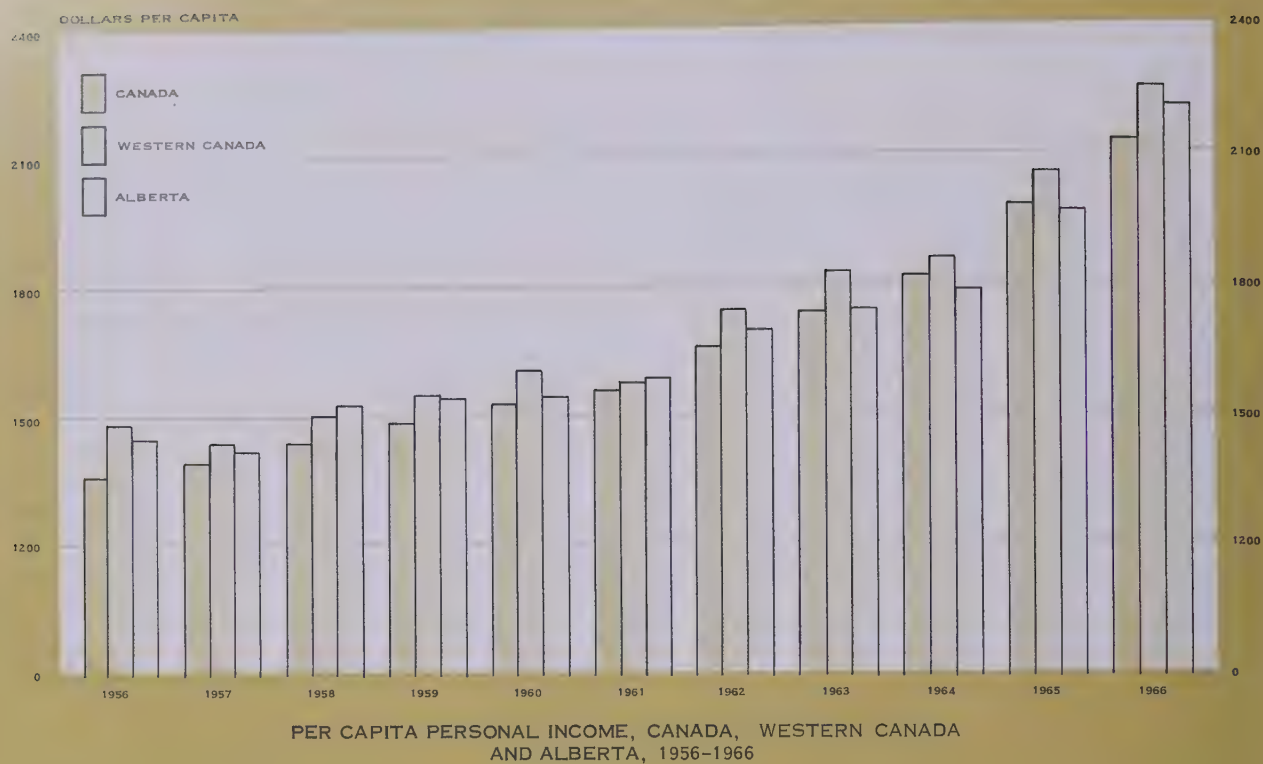


Table 59

TOTAL PERSONAL INCOME AND PER CAPITA PERSONAL INCOME  
CANADA, WESTERN CANADA AND ALBERTA -- 1935 - 1966

	TOTAL PERSONAL INCOME			PER CAPITA PERSONAL INCOME		
	Canada \$	Western Canada \$	Alberta \$	Canada \$	Western Canada \$	Alberta \$
1935	3,348,000,000	863,000,000	187,000,000	309	273	244
1940	4,914,000,000	1,305,000,000	310,000,000	432	403	392
1945	9,120,000,000	2,438,000,000	559,000,000	755	731	692
1950	13,428,000,000	3,779,000,000	919,000,000	979	1,028	1,007
1955	19,738,000,000	5,526,000,000	1,410,000,000	1,257	1,322	1,292
1956	21,885,000,000	6,362,000,000	1,635,000,000	1,361	1,485	1,456
1957	23,191,000,000	6,380,000,000	1,660,000,000	1,396	1,444	1,426
1958	24,675,000,000	6,866,000,000	1,850,000,000	1,445	1,511	1,534
1959	26,036,000,000	7,233,000,000	1,932,000,000	1,489	1,556	1,548
1960	27,435,000,000	7,655,000,000	2,006,000,000	1,535	1,612	1,554
1961	28,522,000,000	7,652,000,000	2,125,000,000	1,564	1,579	1,595
1962	30,972,000,000	8,676,000,000	2,333,000,000	1,668	1,750	1,703
1963	32,934,000,000	9,215,000,000	2,455,000,000	1,743	1,834	1,747
1964	35,153,000,000	9,568,000,000	2,571,000,000	1,828	1,870	1,795
1965	38,902,000,000	10,723,000,000	2,867,000,000	1,988	2,061	1,976
1966	42,712,000,000	11,949,000,000	3,243,000,000	2,134	2,255	2,216

Table 60

COMPONENTS OF PERSONAL INCOME - ALBERTA, 1935 - 1966

	Wages, Salaries and Supplementary Labour Income \$	Net Income Received by Farm Operators from Farm Production \$	Net Income of Non- Farm Unincorporated Business \$
1935	110,000,000	27,000,000	22,000,000
1940	147,000,000	85,000,000	32,000,000
1945	244,000,000	124,000,000	60,000,000
1950	486,000,000	189,000,000	104,000,000
1955	839,000,000	197,000,000	135,000,000
1956	961,000,000	273,000,000	155,000,000
1957	1,029,000,000	181,000,000	162,000,000
1958	1,091,000,000	237,000,000	176,000,000
1959	1,167,000,000	228,000,000	181,000,000
1960	1,215,000,000	192,000,000	194,000,000
1961	1,279,000,000	224,000,000	194,000,000
1962	1,355,000,000	282,000,000	213,000,000
1963	1,424,000,000	309,000,000	217,000,000
1964	1,540,000,000	272,000,000	229,000,000
1965	1,724,000,000	331,000,000	242,000,000
1966	1,953,000,000	425,000,000	250,000,000

	Interest Dividends, and Net Rental Income of Persons \$	Government Transfer Payments \$	Adjustments \$	Total \$
1935	17,000,000	12,000,000	- 1,000,000	187,000,000
1940	27,000,000	13,000,000	6,000,000	310,000,000
1945	43,000,000	40,000,000	48,000,000	559,000,000
1950	74,000,000	70,000,000	- 4,000,000	919,000,000
1955	122,000,000	118,000,000	- 1,000,000	1,410,000,000
1956	129,000,000	121,000,000	- 4,000,000	1,635,000,000
1957	137,000,000	152,000,000	- 1,000,000	1,660,000,000
1958	149,000,000	203,000,000	- 6,000,000	1,850,000,000
1959	171,000,000	199,000,000	- 14,000,000	1,932,000,000
1960	181,000,000	241,000,000	- 17,000,000	2,006,000,000
1961	200,000,000	243,000,000	- 15,000,000	2,125,000,000
1962	225,000,000	272,000,000	- 14,000,000	2,333,000,000
1963	241,000,000	280,000,000	- 16,000,000	2,455,000,000
1964	251,000,000	302,000,000	- 23,000,000	2,571,000,000
1965	271,000,000	328,000,000	- 29,000,000	2,867,000,000
1966	299,000,000	400,000,000	- 84,000,000	3,243,000,000



# CONSUMER MARKET DATA

Western Canada forms a natural market unit. It is isolated within economic boundaries imposed by the Pacific Ocean to the west, the American states to the south, and the Laurentian land bridge to the east. Within those boundaries are to be found 78 per cent of the agricultural land, over 50 per cent of the most highly productive forest land; and by far the bulk of the mineral resources of Canada. The 5.5 million people are slightly over a quarter of the Canadian total.

Western Canadians receive nearly \$12.0 billion or 28 per cent of the gross personal income of Canada. Per capita at \$2,215 is above the Canadian figure of \$2,144.

Increases in income levels are characteristic of economic buoyancy. Personal disposable income (that is income after taxes) of Albertans almost doubled during the past decade, totalling \$3.0 billion in 1966. On a per capita basis personal disposable income increased from \$1,314 in 1957 to \$2,038 in 1966 indicating a cumulative average annual growth of over five per cent. Similarly, labour income rose from \$986 million in 1957 to \$1.9 billion in 1966, a gain of 90 per cent.

Retail sales in 1966 for western Canada totalled \$6.2 billion, about 28 per cent that of Canada. On a per capita basis western Canadian sales were \$1,170, and Canadian \$1,105. Alberta retail sales were of the order of \$1.9 billion in 1967.

Incomes have been rising rapidly. The average income of taxable Albertans rose from \$3,361 in 1954 to \$4,673 in 1964 — and that before the inflationary spurt of subsequent years. Of real significance is the demonstrated earning power of all age groups, particularly as the younger age groups will, for the next few years, outweigh in numbers the older groups. Buying patterns are bound to reflect this changing pattern of income and income spending. Of real significance is the fact that the rise in average per capita taxable income has been far in excess of the rise in the rate of inflation: there has obviously been a rise in real income and in living standards.

Over two-thirds of the Alberta population now live in urban centres, one-third in rural areas: twenty years ago the proportions were reversed. Fifty-six per cent live in the ten cities. In absolute numbers rural population has been decreasing by around 30,000 per decade since 1941, and at an even faster rate in the five years ending in 1966. The province, in common with the other western provinces, is rapidly moving towards the urban in outlook and tastes.

Concurrent with change in the urban - rural balance has been change in the economic base of the province. Mining, manufacturing, construction, and agriculture are now nearly equal in their basic impact on the economy. This has made for more stability in total incomes than two and three decades earlier when the local prosperity depended largely on the yields and prices of agricultural products. These changes in the economic base have given rise to major changes in demand patterns particularly for industrial and commercial equipment.

Public and private investment in capital stock in Alberta has risen from an annual rate of \$390 million in 1948 to an annual rate of \$1,965 million in 1967.

Table 61

## RETAIL TRADE - ALBERTA, 1951 - 1966

(millions of dollars)

	1951	1952	1953	1954	1955	1956	1957	1958	1959
<u>Sales, Distribution by Groups</u>									
Grocery and Combination Stores .....	104	116	124	138	143	160	180	202	222
% .....	12.2	12.3	12.6	14.1	13.6	13.4	14.5	15.3	15.8
Other Food and Beverage Stores .....	55	57	59	62	66	68	67	64	73
% .....	6.4	6.0	6.0	6.3	6.2	5.7	5.4	4.9	5.2
General Stores .....	60	60	58	54	51	54	54	58	57
% .....	7.1	6.4	5.9	5.5	4.8	4.5	4.3	4.4	4.0
Department Stores .....	86	96	103	103	114	128	138	153	160
% .....	10.1	10.2	10.4	10.5	10.8	10.8	11.1	11.6	11.4
Variety Stores .....	10	12	13	13	14	16	17	18	19
% .....	1.2	1.2	1.2	1.3	1.4	1.3	1.3	1.4	1.4
Motor Vehicle Dealers .....	194	212	214	185	214	246	255	242	274
% .....	22.7	22.5	21.6	18.9	20.3	20.7	20.4	18.4	19.5
Garages and Filling Stations .....	42	50	58	66	69	81	84	93	99
% .....	4.9	5.3	5.8	6.8	6.5	6.8	6.7	7.0	7.0
Men's Clothing Stores .....	13	15	16	15	19	20	19	19	19
% .....	1.6	1.6	1.6	1.5	1.7	1.7	1.5	1.4	1.3
Family Clothing Stores .....	14	13	14	14	15	17	19	18	16
% .....	1.6	1.3	1.4	1.4	1.4	1.4	1.6	1.4	1.2
Women's Clothing Stores .....	12	16	19	20	19	20	21	22	22
% .....	1.4	1.7	1.9	2.1	1.8	1.7	1.7	1.7	1.6
Shoe Stores .....	5	5	5	5	6	8	8	8	10
% .....	0.5	0.6	0.5	0.5	0.6	0.7	0.7	0.6	0.7
Hardware Stores .....	25	26	26	24	24	31	32	33	33
% .....	2.9	2.8	2.7	2.5	2.2	2.6	2.6	2.5	2.4
Lumber and Building Material Dealers .....	47	53	64	59	63	72	66	73	80
% .....	5.6	5.7	6.5	6.0	5.9	6.0	5.3	5.5	5.7
Furniture, Appliances, Radio Stores .....	21	29	30	34	43	42	47	54	54
% .....	2.5	3.1	3.1	3.4	4.1	3.6	3.8	4.1	3.8
Restaurants .....	38	42	42	40	41	48	51	56	55
% .....	4.4	4.5	4.2	4.1	3.9	4.1	4.1	4.2	3.9
Fuel Oil Dealers .....	1	1	1	1	1	1	2	5	5
% .....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4
Drug Stores .....	18	20	22	23	25	28	32	35	34
% .....	2.1	2.1	2.2	2.3	2.3	2.4	2.6	2.7	2.4
Jewellery Stores .....	7	8	8	6	7	8	9	9	10
% .....	0.8	0.9	0.8	0.6	0.7	0.7	0.7	0.7	0.7
Other Retail Stores .....	102	110	114	118	123	140	144	156	163
% .....	11.9	11.7	11.5	12.1	11.7	11.8	11.6	11.8	11.6
TOTAL RETAIL TRADE .....	854	941	990	980	1,057	1,188	1,245	1,318	1,405
	1960	1961	1961*	1962	1963	1964	1965	1966	
Grocery and Combination Stores .....	232	243	242	259	267	283	308	332	
% .....	16.3	16.6	19.1	19.0	18.8	18.9	19.2	19.1	
Other Food and Beverage Stores .....	76	77	33	35	36	32	36	38	
% .....	5.4	5.2	2.6	2.5	2.5	2.1	2.2	2.2	
General Stores .....	57	60	60	63	66	71	71	76	
% .....	4.0	4.1	4.7	4.6	4.6	4.7	4.5	4.4	
Department Stores .....	162	169	169	176	183	197	206	224	
% .....	11.4	11.5	13.2	12.9	12.9	13.1	12.8	12.9	
Variety Stores .....	21	23	23	25	26	28	35	44	
% .....	1.5	1.6	1.8	1.9	1.8	1.9	2.2	2.5	
Motor Vehicle Dealers .....	248	251	251	281	299	310	345	364	
% .....	17.4	17.1	19.7	20.6	21.0	20.6	21.6	21.0	
Garages and Filling Stations .....	109	119	136	139	141	146	146	158	
% .....	7.6	8.1	10.7	10.2	9.9	9.7	9.1	9.1	
Men's Clothing Stores .....	19	17	17	17	18	20	22	23	
% .....	1.4	1.1	1.3	1.2	1.2	1.3	1.4	1.3	
Family Clothing Stores .....	18	20	20	15	16	17	17	18	
% .....	1.3	1.4	1.6	1.1	1.1	1.1	1.0	1.0	
Women's Clothing Stores .....	22	21	21	22	22	23	25	29	
% .....	1.5	1.4	1.6	1.6	1.5	1.5	1.6	1.7	
Shoe Stores .....	11	10	10	12	12	13	13	14	
% .....	0.7	0.7	0.8	0.9	0.9	0.9	0.8	0.8	
Hardware Stores .....	31	29	29	31	30	30	32	34	
% .....	2.2	2.0	2.3	2.2	2.1	2.0	2.0	2.0	
Lumber and Building Material Dealers .....	84	90	-	-	-	-	-	-	
% .....	5.9	6.1	-	-	-	-	-	-	
Furniture, Appliances, Radio Stores .....	47	41	37	37	40	42	41	45	
% .....	3.3	2.8	2.9	2.7	2.9	2.8	2.6	2.6	
Restaurants .....	60	62	-	-	-	-	-	-	
% .....	4.2	4.2	-	-	-	-	-	-	
Fuel Oil Dealers .....	6	7	7	8	8	9	11	10	
% .....	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.6	
Drug Stores .....	36	37	37	40	41	40	43	49	
% .....	2.5	2.5	2.9	2.9	2.9	2.7	2.7	2.8	
Jewellery Stores .....	10	10	10	11	14	15	16	18	
% .....	0.7	0.7	0.8	0.8	1.0	1.0	1.0	1.0	
Other Retail Stores .....	175	182	170	196	203	227	233	260	
% .....	12.3	12.4	13.4	14.3	14.3	15.1	14.6	15.0	
TOTAL RETAIL TRADE .....	1,424	1,468	1,272	1,367	1,422	1,503	1,600	1,736	

\* Revised basis

Table 62

DECLARED PERSONAL INCOME, BY NUMBERS AND AGES OF TAXPAYERS, 1963 - 1965;  
AND DECLARED PERSONAL INCOME NOT SUBJECT TO INCOME TAX,  
BY NUMBERS AND AGES OF INCOME EARNERS, 1965

(All money figures in thousands of dollars)

		TAXABLE RETURNS						NON-TAXABLE RETURNS	
		1963		1964		1965		1965	
		Number	Income	Number	Income	Number	Income	Number	Income
Under	21	20,026	42,327	21,947	48,478	27,738	63,886	21,440	14,118
	21	9,810	25,015	10,778	29,611	11,123	30,911	3,540	3,062
	22	8,511	24,941	9,370	28,507	12,724	40,408	2,751	2,886
	23	8,683	26,858	10,635	35,457	10,280	34,778	2,301	2,197
	24	7,889	26,565	11,110	39,991	10,622	40,593	2,042	1,743
	25	8,893	32,748	8,115	30,239	9,536	40,475	1,791	1,804
	26	8,207	32,094	9,369	37,413	9,328	39,641	1,712	1,855
	27	7,806	31,997	8,038	34,018	9,166	40,390	1,831	1,806
	28	8,324	35,601	8,960	39,157	9,140	43,178	1,924	2,359
	29	8,176	35,715	9,118	41,547	10,119	47,798	1,378	1,315
	30	8,091	36,481	7,771	37,030	8,551	45,335	2,156	2,036
	31	8,362	40,471	8,339	42,039	9,371	46,864	1,594	2,300
	32	8,486	42,248	8,473	44,773	8,300	44,192	2,027	2,762
	33	8,691	44,401	8,076	42,875	9,361	49,279	1,882	2,125
	34	8,001	41,274	8,097	42,814	8,748	51,288	1,739	2,110
	35	8,954	44,997	7,273	41,146	9,759	54,650	2,433	2,660
	36	8,141	41,276	8,155	43,367	8,390	48,375	1,868	1,841
	37	8,465	44,540	8,937	49,510	8,419	47,225	1,673	2,710
	38	7,429	40,254	6,748	36,486	8,343	50,419	1,946	3,097
	39	7,876	39,748	8,191	42,855	8,174	44,802	2,096	2,625
	40	7,085	39,370	9,141	50,270	8,431	47,403	1,951	3,525
	41	7,390	38,035	8,098	42,817	7,568	43,712	2,071	3,177
	42	8,128	42,682	8,656	44,919	7,398	42,161	1,886	3,537
	43	7,270	37,343	8,191	44,240	8,553	47,314	1,779	2,496
	44	5,675	29,995	7,216	40,903	8,655	48,554	1,838	2,916
	45	6,327	34,494	6,609	37,323	7,873	45,265	2,052	2,633
	46	5,755	30,705	6,091	32,519	6,598	41,040	1,628	2,734
	47	5,753	30,753	5,949	35,097	7,593	41,217	1,809	2,152
	48	5,368	28,960	5,871	33,072	6,135	35,966	1,558	1,590
	49	6,327	33,676	5,400	29,851	6,720	36,306	1,557	2,129
	50	5,317	26,572	5,284	27,582	6,059	35,489	1,498	2,117
	51	5,462	27,731	5,873	31,596	6,256	36,671	1,380	2,128
	52	4,717	24,861	5,725	30,184	5,823	31,375	1,675	2,107
	53	4,635	23,933	5,760	29,178	5,937	32,676	1,780	438
	54	4,756	23,510	4,743	24,345	4,907	25,950	1,217	1,994
	55	4,235	21,622	4,377	23,166	5,520	29,950	1,568	2,093
	56	4,292	21,984	4,749	24,747	5,566	31,254	1,545	1,711
	57	4,065	19,199	5,068	24,633	4,729	24,915	947	1,137
	58	4,037	19,729	3,989	20,516	3,966	20,717	1,394	1,845
	59	3,482	16,091	4,316	22,203	4,307	22,553	1,004	1,037
	60	3,599	18,135	3,193	16,715	3,811	19,686	1,071	1,182
	61	2,747	12,428	3,251	17,113	3,554	19,401	1,414	1,835
	62	2,621	12,061	3,529	17,020	3,652	19,670	1,322	2,303
	63	2,972	14,444	2,409	12,231	3,030	16,043	885	1,130
	64	2,077	10,025	2,421	11,346	2,900	13,916	1,071	1,341
	65	2,166	9,244	1,573	8,290	3,101	15,340	1,445	2,255
	66	1,372	6,846	1,646	7,689	1,871	10,665	1,152	1,628
	67	1,290	5,644	1,382	7,026	1,428	6,965	1,532	2,424
	68	990	4,764	1,479	7,107	1,458	7,179	990	1,172
	69	1,016	4,321	1,276	6,218	733	3,930	1,142	1,700
70 and Over		9,958	42,723	13,167	58,049	12,829	58,823	5,790	9,021
Not Stated		20,093	90,564	17,255	82,418	14,106	65,438	7,615	7,613
TOTAL		339,798	1,531,995	361,187	1,687,693	388,259	1,882,029	117,690	134,512



Table 63 AVERAGE INCOME OF TAXABLE PERSONS, BY OCCUPATIONAL CLASSES, ALBERTA:  
1954 - 1964

Occupation	1954	1956	1958	1960	1962	1964
	\$	\$	\$	\$	\$	\$
Farmers	3,296	3,775	4,396	4,309	4,661	5,063
Fishermen	-	3,864	-	-	-	4,200
Accountants	6,752	8,685	8,787	11,494	9,362	10,948
Medical Doctors and Surgeons	11,986	12,063	16,073	18,146	18,333	21,111
Dentists	9,327	11,905	11,526	13,038	16,898	16,826
Lawyers and Notaries	10,968	11,371	13,890	14,622	15,375	17,031
Engineers and Architects	-	11,027	12,017	10,000	10,459	11,382
Entertainers and Artists	-	-	-	3,280	6,170	4,293
Nurses	2,283	1,840	1,350	-	-	-
Other Professional	6,470	6,340	6,117	7,055	6,192	6,461
Agricultural Enterprises	2,027	1,870	2,092	-	-	-
Employees of Business	3,207	3,526	3,875	4,091	4,317	4,544
Employees of Institutions	2,227	2,402	2,596	2,809	3,012	3,146
Teachers and Professors	3,186	3,453	4,134	4,622	4,953	5,459
Federal Government Employees	3,030	3,138	3,468	3,858	4,014	4,551
Provincial Government Employees	2,872	3,099	3,488	3,902	3,981	4,191
Municipal and Smaller Government Employees	3,043	3,329	3,751	4,129	4,259	4,578
Unclassified	2,530	2,445	2,798	2,628	2,688	3,236
Salesmen	4,511	5,155	5,032	5,144	5,727	6,083
Forestry Operators	-	-	4,177	4,636	-	10,237
Manufacturers	5,158	6,154	6,667	6,761	5,560	5,374
Construction	4,841	5,476	5,364	5,100	4,897	4,886
Public Utilities	3,320	4,154	4,116	4,175	4,109	4,712
Wholesale Traders	6,947	9,326	7,679	6,904	7,501	6,741
Retail Traders	5,174	5,589	5,904	5,194	5,345	5,745
Service	3,724	4,046	4,419			
Recreation Services Operators				5,745	6,070	5,333
Business Services Operators				4,239	4,380	7,217
Other Service Operators				4,074	4,375	4,721
Finance	6,659	6,933	8,444			
Insurance Agencies				6,333	7,383	8,067
Real Estate				6,978	9,321	7,685
Other Finance				14,500	16,758	10,807
Other Business Operators	5,523	7,776	14,500	5,210	5,257	7,631
Investment Income Predominates	5,867	5,119	5,758	5,704	5,622	5,430
Pension Income Predominates	2,324	2,368	2,970	3,019	3,421	3,273
Property Owners	-	-	-	-	-	4,828
Estates	3,838	3,416	1,209	2,342	5,112	-
Unclassified	3,720	5,280	4,275	4,401	4,854	5,457
Average for All Classes	3,361	3,665	3,995	4,180	4,420	4,673

Also includes Northwest Territories up to and including 1956.

- Insufficient returns - included in total but not shown separately.

Table 64

DISTRIBUTION OF TAXABLE RETURNS BY  
1954 -

(thousands of dollars)

			Sources of Income							
			No. of Returns	Wages and Salaries	Business Income	Professional Income	Commission Income	Farm or Fishing Income	Old Age Pension Income	Alimony
CALGARY										
1	1954	.....	61,090	184,720	13,709	4,961	4,163	762	550	-
2	1955	.....	63,810	199,568	14,124	6,521	6,238	1,551	428	-
3	1956	.....	69,514	222,893	15,579	7,339	7,769	2,425	665	-
4	1957	.....	75,082	257,853	14,617	8,202	9,004	2,890	803	-
5	1958	.....	79,083	286,677	13,177	8,722	7,213	2,475	1,185	-
6	1959	.....	82,236	314,125	14,590	10,588	8,617	2,615	1,144	-
7	1960	.....	83,907	327,416	15,093	11,473	5,557	2,307	1,263	-
8	1961	.....	87,282	342,573	15,311	11,397	7,248	2,965	1,591	-
9	1962	.....	95,744	393,458	15,811	13,835	7,308	3,330	1,921	-
10	1963	.....	95,957	395,944	12,938	13,220	8,275	2,386	2,236	80
11	1964	.....	104,001	442,219	16,658	15,718	10,847	3,872	3,124	492
EDMONTON										
12	1954	.....	77,450	226,831	14,617	6,737	4,642	573	432	-
13	1955	.....	84,000	258,340	14,435	7,040	5,027	821	480	-
14	1956	.....	91,081	293,960	17,094	9,696	7,540	1,311	495	-
15	1957	.....	95,524	324,682	14,255	8,568	5,784	833	739	-
16	1958	.....	96,215	331,187	19,466	12,368	7,927	1,038	914	-
17	1959	.....	95,499	348,768	14,686	12,467	9,154	1,127	774	-
18	1960	.....	97,257	357,324	12,262	12,732	8,131	723	999	-
19	1961	.....	107,559	408,758	14,414	14,993	8,050	617	1,349	-
20	1962	.....	114,077	443,753	15,306	15,626	8,664	1,980	1,639	-
21	1963	.....	118,479	480,654	16,308	15,169	8,977	1,429	1,752	243
22	1964	.....	124,493	509,424	17,270	18,852	9,778	1,552	2,514	278
LETHBRIDGE										
23	1954	.....	8,850	23,420	2,195	1,347	594	1,174	77	-
24	1955	.....	9,090	24,470	2,576	528	756	1,115	92	-
25	1956	.....	9,368	25,200	2,326	1,671	796	1,796	76	-
26	1957	.....	10,249	29,169	2,927	1,174	839	1,975	135	-
27	1958	.....	10,573	31,109	3,157	1,218	1,545	1,562	170	-
28	1959	.....	10,732	33,584	3,477	1,621	796	1,777	276	-
29	1960	.....	10,933	35,754	2,350	1,772	1,104	2,581	262	-
30	1961	.....	10,940	35,368	2,601	1,896	815	2,802	255	-
31	1962	.....	12,184	39,842	2,781	2,503	1,060	2,323	396	-
32	1963	.....	12,074	42,413	2,475	1,783	597	2,464	264	-
33	1964	.....	12,649	44,059	2,860	2,130	860	2,616	537	16
MEDICINE HAT										
34	1954	.....	4,730	11,932	1,277	570	119	960	53	-
35	1955	.....	5,090	12,940	1,758	265	327	1,489	66	-
36	1956	.....	6,011	15,601	1,860	411	111	2,147	30	-
37	1957	.....	6,594	17,567	1,684	501	150	1,997	70	-
38	1958	.....	5,942	17,395	1,049	388	415	1,896	57	-
39	1959	.....	6,787	19,509	1,501	383	362	2,743	83	-
40	1960	.....	7,496	23,257	1,999	575	282	2,116	97	-
41	1961	.....	6,367	20,114	1,834	631	281	1,432	213	-
42	1962	.....	6,903	23,319	970	595	467	989	163	-
43	1963	.....	6,830	23,897	964	883	221	1,084	259	24
44	1964	.....	7,870	26,348	2,052	757	408	1,792	435	22
RED DEER										
45	1961	.....	5,889	20,687	1,811	701	196	258	35	-
46	1962	.....	7,536	25,204	1,632	831	339	1,028	224	-
47	1963	.....	8,188	28,773	1,616	695	252	590	132	27
48	1964	.....	8,319	30,283	2,203	1,027	766	1,142	152	8

SOURCES OF INCOME FOR MAJOR CITIES, ALBERTA  
- 1964

(thousands of dollars)

Dividends	Bond & Bank Interest	Rental Income	Sources of Income				Total Income Assessed	
			Annuity Income	Estate Income	Mortgage Interest	Miscellaneous Income		
CALGARY								
4,823	1,694	3,255	139	1,360	688	1,153	221,977	1
7,462	1,992	2,404	189	1,250	935	1,008	243,670	2
4,975	2,044	4,637	240	1,495	796	1,096	271,953	3
6,191	2,463	4,048	230	977	607	1,294	309,179	4
5,204	3,584	5,086	244	1,678	1,129	2,586	338,960	5
6,893	3,944	4,411	321	906	1,483	2,442	372,078	6
6,475	4,371	3,300	258	1,426	1,244	2,202	382,384	7
6,452	5,254	3,514	263	1,484	1,641	3,857	403,548	8
7,904	7,372	2,624	448	2,021	1,894	2,360	460,284	9
7,091	7,778	1,647	376	1,681	1,894	3,059	458,604	10
9,510	9,785	1,499	570	2,203	1,778	5,758	524,035	11
EDMONTON								
3,874	1,645	2,332	164	748	659	1,478	264,732	12
3,585	1,344	2,900	173	600	713	1,805	297,263	13
4,160	1,818	2,735	176	657	1,067	949	341,658	14
6,053	2,443	3,535	99	800	1,343	1,127	370,261	15
5,331	2,583	2,659	173	917	1,991	1,314	387,868	16
5,056	3,370	3,051	322	669	2,187	1,650	403,280	17
4,840	3,919	2,792	324	981	1,888	1,788	408,702	18
5,846	5,223	2,879	210	1,593	1,980	2,198	468,110	19
6,620	6,696	2,510	106	1,080	2,019	1,981	507,981	20
6,345	6,774	2,191	208	1,443	1,716	2,574	545,783	21
7,860	8,834	2,084	317	1,398	2,266	3,385	585,811	22
LETHBRIDGE								
376	271	906	13	345	211	96	31,025	23
199	207	443	16	44	22	31	30,499	24
431	296	591	1	180	104	111	33,579	25
546	382	854	15	269	86	70	38,441	26
526	527	612	55	148	112	204	40,945	27
439	752	676	2	93	165	90	43,748	28
495	724	621	17	312	189	263	46,444	29
554	617	659	4	195	116	312	46,195	30
790	1,436	615	20	238	243	188	52,433	31
803	826	450	28	229	319	122	52,773	32
912	1,734	142	50	115	179	245	56,456	33
MEDICINE HAT								
119	128	164	8	-	61	10	15,401	34
94	127	252	1	72	55	25	17,471	35
188	135	160	20	14	97	49	20,823	36
191	132	301	15	27	78	122	22,835	37
179	319	390	40	34	147	133	22,442	38
238	262	266	14	1	116	18	25,496	39
155	276	216	9	33	75	131	29,221	40
429	577	82	24	54	135	139	25,945	41
185	547	128	7	23	238	24	27,654	42
422	398	137	29	110	134	47	28,607	43
631	966	194	34	3	170	127	33,939	44
RED DEER								
386	285	368	1	2	136	133	25,000	45
387	537	298	13	66	161	174	30,893	46
322	265	204	2	18	160	167	33,225	47
450	433	106	1	171	126	138	37,006	48



Table 1  
NUMBER OF INCOME TAXPAYERS, AVERAGE INCOME AND TOTAL INCOME  
FOR ALBERTA CITIES<sup>+</sup>  
1954 - 1964

Year	Place of Residence	Position* In Order of Average Income	Number of Taxpayers No.	Average Income \$	Total Income Reported \$'000,000
1954	Calgary	7	61,090	3,633	222.0
	Edmonton	28	77,450	3,418	264.7
	Lethbridge	15	8,850	3,506	31.0
1955	Calgary	6	63,810	3,819	243.7
	Edmonton	28	84,000	3,539	297.3
	Lethbridge	48	9,090	3,355	30.5
	Medicine Hat	37	5,090	3,433	17.5
1956	Calgary	9	69,514	3,913	272.0
	Edmonton	26	91,081	3,751	341.7
	Lethbridge	37	9,368	3,584	33.6
	Medicine Hat	55	6,011	3,464	20.8
1957	Calgary	9	75,082	4,118	309.2
	Edmonton	27	95,524	3,876	370.3
	Lethbridge	39	10,249	3,751	38.4
	Medicine Hat	60	6,594	3,463	22.8
1958	Calgary	5	79,083	4,286	339.1
	Edmonton	27	96,215	4,031	387.9
	Lethbridge	47	10,573	3,872	40.9
	Medicine Hat	58	5,942	3,777	22.4
1959	Calgary	3	82,236	4,525	372.1
	Edmonton	16	95,499	4,223	403.3
	Lethbridge	27	10,732	4,076	43.7
	Medicine Hat	54	6,787	3,757	25.5
1960	Calgary	7	83,907	4,557	382.4
	Edmonton	31	97,257	4,202	408.7
	Lethbridge	26	10,933	4,248	46.4
	Medicine Hat	53	7,496	3,898	29.2
1961	Calgary	9	87,282	4,623	403.5
	Edmonton	25	107,559	4,352	468.1
	Lethbridge	39	10,940	4,223	46.2
	Medicine Hat	49	6,367	4,075	25.9
1962	Calgary	7	95,744	4,807	460.3
	Edmonton	25	114,077	4,453	508.0
	Lethbridge	35	12,184	4,303	52.4
	Red Deer	49	7,536	4,099	30.9
1963	Calgary	14	95,957	4,779	458.6
	Edmonton	22	118,479	4,606	545.8
	Lethbridge	39	12,074	4,370	52.8
	Red Deer	61	8,188	4,057	33.2
1964	Calgary	13	104,001	5,039	524.0
	Edmonton	38	124,493	4,706	585.8
	Lethbridge	57	12,649	4,463	56.5
	Medicine Hat	72	7,870	4,312	33.9
	Red Deer	60	8,319	4,448	37.0

Indicates rating of specified Alberta cities compared with other Canadian cities, e.g. in 1959 Calgary taxpayers had the third highest average income in Canada.

+ Having more than 5,000 taxpayers to 1960, 6,200 taxpayers in 1961, 7,000 taxpayers 1962-1964.

Table 66 DISTRIBUTION OF INCOME CLASSES BY NUMBER OF TAXABLE RETURNS - ALBERTA, BY MAJOR CITIES, 1948 - 1964

Income Classes	1948	1951	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
TOTAL ALBERTA													
Under - \$1,000	11,800	770	2,070	1,540	1,780	2,780	1,160	1,500	1,480	1,402	2,193	1,945	1,642
\$1,000 - 1,999	62,540	44,170	49,720	46,740	48,640	47,280	43,620	44,441	45,320	44,100	41,234	46,442	45,184
2,000 - 2,999	57,760	63,140	66,330	64,640	67,600	66,820	64,300	62,760	62,550	62,900	63,795	62,782	62,717
3,000 - 3,999	17,990	37,240	56,280	57,760	65,620	70,520	71,460	69,280	71,460	69,660	60,153	66,193	66,292
4,000 - 4,999	6,240	14,040	25,520	24,810	34,980	41,360	47,360	52,780	54,680	57,360	60,925	59,544	63,374
5,000 - 5,999	2,930	6,490	10,390	13,140	16,800	21,920	24,960	28,421	31,140	35,160	36,686	39,351	46,790
6,000 - 6,999	1,790	2,950	5,150	5,760	8,320	10,640	12,761	15,460	16,000	18,120	21,874	23,151	27,519
7,000 - 7,999	1,030	1,950	2,430	2,460	4,520	5,582	6,720	7,920	9,121	10,620	12,098	13,322	16,073
8,000 - 8,999	810	1,320	1,510	2,030	2,780	3,500	4,060	5,060	5,260	5,520	7,068	8,065	9,814
9,000 - 9,999	530	890	1,070	1,090	1,940	2,260	2,900	3,380	3,600	3,860	4,583	5,167	5,921
10,000 - 14,999	1,180	1,850	2,280	3,150	3,700	4,679	4,956	6,101	6,128	6,740	8,524	10,225	10,245
Over - 15,000	910	1,380	1,990	2,110	1,192	1,241	1,471	1,824	1,841	2,163	2,828	2,433	2,833
Over - 20,000					1,145	1,277	637	666	736	855	1,009	1,069	1,335
Over - 25,000							910	920	933	999	1,119	1,117	1,439
CALGARY													
Under - \$1,000	2,300	130	550	450	650	760	540	460	420	381	461	391	301
\$1,000 - 1,999	16,020	11,460	12,320	11,630	11,500	10,980	10,820	9,680	10,520	10,300	10,209	12,120	11,277
2,000 - 2,999	14,430	17,030	17,640	18,650	17,000	16,800	16,980	16,560	16,300	16,700	17,102	16,381	16,847
3,000 - 3,999	4,010	9,340	15,220	15,560	18,160	19,020	18,320	18,060	17,800	18,200	18,330	18,051	18,038
4,000 - 4,999	1,350	3,220	7,290	7,930	10,260	11,620	13,920	14,780	14,900	16,010	18,406	17,001	17,850
5,000 - 5,999	630	1,570	2,880	3,820	4,300	6,300	7,420	8,441	8,740	9,840	10,753	11,190	14,791
6,000 - 6,999	460	720	1,540	1,650	2,360	2,720	3,600	4,920	5,340	5,180	7,217	9,740	8,228
7,000 - 7,999	290	500	890	850	1,380	1,801	2,080	2,520	3,181	3,440	4,185	4,431	5,118
8,000 - 8,999	250	390	590	550	860	1,380	1,280	2,000	1,620	1,120	2,146	2,153	3,342
9,000 - 9,999	170	280	390	480	660	1,000	900	1,200	1,220	1,430	1,588	1,813	2,175
10,000 - 14,999	350	620	920	1,210	1,456	1,756	2,096	2,318	2,431	2,122	3,115	3,272	3,716
Over - 15,000	310	530	860	1,030	337	452	479	644	738	666	1,292	912	1,056
Over - 20,000					501	493	230	259	275	363	420	437	509
Over - 25,000							400	304	422	430	520	320	663
EDMONTON													
Under - \$1,000	3,230	400	830	630	700	1,280	980	480	520	621	990	531	740
\$1,000 - 1,999	10,160	14,730	16,850	17,200	16,700	15,900	14,780	13,900	13,540	13,640	13,025	15,160	14,779
2,000 - 2,999	13,290	19,550	22,250	22,930	23,000	22,480	21,460	19,520	20,200	21,280	21,818	21,570	21,276
3,000 - 3,999	4,460	11,100	19,370	20,050	22,320	23,120	24,020	21,720	23,000	23,420	24,093	22,561	22,740
4,000 - 4,999	1,350	4,330	8,220	11,840	12,860	14,580	15,640	17,200	16,660	18,660	20,585	21,341	21,521
5,000 - 5,999	690	1,990	3,670	5,100	6,480	7,980	8,160	9,820	9,820	12,180	13,265	13,450	16,873
6,000 - 6,999	330	860	1,590	2,420	3,040	3,920	4,361	5,140	5,020	6,200	7,643	8,630	9,886
7,000 - 7,999	160	570	780	920	1,020	1,861	2,340	2,740	2,520	3,480	4,007	4,470	6,037
8,000 - 8,999	100	360	480	830	1,060	1,080	1,400	1,620	1,700	2,260	2,390	3,471	2,999
9,000 - 9,999	100	200	380	300	780	600	1,020	980	1,240	1,100	1,527	1,531	2,017
10,000 - 14,999	270	410	870	1,090	1,219	1,675	1,497	2,068	1,899	2,291	2,988	4,127	3,414
Over - 15,000	250	490	770	690	545	490	528	708	502	748	861	867	967
Over - 20,000					457	558	245	231	258	303	368	330	440
Over - 25,000							383	372	378	396	431	440	564
LETHBRIDGE													
Under - \$1,000	330	40			40	80			20			20	40
\$1,000 - 1,999	2,040	1,500	2,000	1,990	1,900	1,860	2,000	1,881	1,660	1,420	1,521	1,640	1,570
2,000 - 2,999	2,220	2,440	2,650	2,590	2,740	2,540	2,440	2,260	2,300	2,340	2,302	2,480	2,602
3,000 - 3,999	640	1,250	2,140	2,310	2,240	2,540	2,740	2,440	2,340	2,640	2,882	2,380	2,405
4,000 - 4,999	100	580	790	1,200	940	1,000	1,440	1,700	1,980	1,840	2,244	1,960	2,216
5,000 - 5,999	80	250	540	440	760	660	840	1,020	940	1,180	1,226	1,620	1,648
6,000 - 6,999	50	100	150	200	240	360	360	640	500	360	886	661	757
7,000 - 7,999	30	70	130	100	80	160	160	180	420	300	262	420	445
8,000 - 8,999	40	40			120	100	220	160	140	80	204	200	260
9,000 - 9,999	50	60			60	20	60	140	220	160	206	271	186
10,000 - 14,999	80	90	100		141	224	166	172	257	266	292	258	335
Over - 15,000	40	70	140		70	54	92	65	90	66	88	99	101
Over - 20,000					37	51	28	26	32	32	40	32	40
Over - 25,000							27	48	34	36	31	33	35
MEDICINE HAT													
Under - \$1,000	330	10			20	20		20	100			40	
\$1,000 - 1,999	1,490	1,010	1,150	1,160	1,300	1,440	1,060	1,200	1,000	1,000	920	840	1,220
2,000 - 2,999	1,280	1,390	1,520	1,690	1,760	1,740	1,340	1,520	1,560	1,260	1,700	1,360	1,222
3,000 - 3,999	450	690	1,070	1,110	1,460	1,480	1,620	1,660	2,080	1,500	1,561	1,560	1,586
4,000 - 4,999	170	280	460	340	660	980	740	1,120	1,260	1,080	1,086	1,380	1,627
5,000 - 5,999	70	180	270	270	260	500	440	660	640	760	783	740	907
6,000 - 6,999	10	10	120	120	220	220	460	320	400	280	224	280	546
7,000 - 7,999	10				120	60	40	100	140	180	208	320	348
8,000 - 8,999	10	20			40	20	120	40	100	120	143	60	146
9,000 - 10,000	20	10			20	20			60	40	64	40	24
10,000 - 14,999	20	50		100	91	72	86	99	78	95	148	114	136
Over - 15,000					16	20	17	27	34	32	41	77	77
Over - 20,000					24	22	11	10	15	12	14	6	20
Over - 25,000							8	11	9	8	9	10	11
RED DEER													
Under - \$1,000											20	140	60
\$1,000 - 1,999										780	900	1,160	880
2,000 - 2,999										1,360	1,861	1,750	1,623
3,000 - 3,999										1,080	1,804	1,760	1,651
4,000 - 4,999										1,000	1,156	1,380	1,445
5,000 - 5,999										780	688	780	1,209
6,000 - 6,999										380	324	440	467
7,000 - 7,999										60	143	300	361
8,000 - 8,999										140	246	100	283
9,000 - 10,000										100	127	101	103
10,000 - 14,999										152	204	217	144
Over - 15,000										40	41	34	55
Over - 20,000										8	15	18	23
Over - 25,000										2	8	8	15

\* Less than 100; included in total but not shown separately.

PUBLIC AND PRIVATE INVESTMENT IN ALBERTA  
1948 - 1967  
(millions of dollars)

	Primary Industries and Con- struction	Manufac- turing	Utilities	Trade, Finance and Com- mercial Services	Housing	Institutional Services and Government Departments	Capital Con- struction	Total and Repair Machinery & Equipment	Expenditures Total
1948	**	23.4	61.8	**	65.6	74.3	*	*	390.1
1949	164.8	20.6	79.2	25.9	91.1	88.0	280.5	189.1	469.6
1950	192.5	24.4	86.9	41.4	85.8	90.2	312.2	209.0	521.2
1951	234.1	45.1	97.1	54.7	77.9	125.9	379.1	255.7	634.8
1952	272.8	86.4	125.1	55.1	87.0	134.8	454.7	306.5	761.2
1953	269.0	104.1	130.0	72.1	123.0	198.9	569.5	327.6	897.1
1954	238.0	64.0	144.3	60.9	140.2	159.7	530.4	276.7	807.1
1955	308.2	78.0	143.6	59.9	140.1	188.3	636.0	282.1	918.1
1956	380.2	130.9	186.6	54.4	155.6	207.9	725.6	390.0	1115.6
1957	336.0	82.7	210.3	64.6	154.0	223.1	707.2	363.5	1070.7
1958	321.3	90.5	204.5	75.1	218.6	218.3	786.7	341.6	1128.3
1959	381.5	100.1	190.5	83.5	216.8	244.2	818.7	397.9	1216.6
1960	393.4	84.3	219.4	91.2	177.4	254.9	815.5	405.1	1220.6
1961	443.8	56.9	242.6	79.5	195.3	251.8	876.6	393.3	1269.9
1962	383.1	72.7	184.8	83.3	229.5	282.7	820.1	416.0	1236.1
1963	462.1	64.8	216.7	101.2	221.8	243.6	862.0	448.2	1310.2
1964	518.3	83.2	239.3	110.6	214.2	256.0	920.0	501.6	1421.6
1965	644.1	105.6	283.4	119.2	215.2	296.8	1093.5	570.8	1664.3
1966	717.8	94.6	335.3	127.4	209.7	384.9	1249.7	620.0	1869.7
1967	741.4	86.8	338.9	135.3	212.1	450.2	1289.5	675.2	1964.7

\* Figures not available.

\*\* Figures included in total.



*Beef cattle are a mainstay of Alberta's livestock industry.*



Table 68

THE CONSUMER PRICE INDEX -- CANADA, 1914 - 1966  
(1949 = 100)

Year	Index	Year	Index	Year	Index	Year	Index	Year	Index	Year	Index
1914	49.6	1923	75.2	1932	61.7	1941	69.6	1950	102.9	1959	126.5
1915	50.3	1924	74.0	1933	58.8	1942	72.9	1951	113.7	1960	128.0
1916	54.2	1925	74.6	1934	59.6	1943	74.2	1952	116.5	1961	129.2
1917	63.7	1926	75.9	1935	59.9	1944	74.6	1953	115.5	1962	130.7
1918	72.0	1927	74.6	1936	61.1	1945	75.0	1954	116.2	1963	133.0
1919	78.8	1928	75.0	1937	63.0	1946	77.5	1955	116.4	1964	135.4
1920	90.5	1929	75.8	1938	63.7	1947	84.8	1956	118.1	1965	138.7
1921	80.9	1930	75.3	1939	63.2	1948	97.0	1957	121.9	1966	143.9
1922	74.9	1931	67.9	1940	65.7	1949	100.0	1958	125.1		

Table 69

COMPONENT GROUP INDEXES OF THE CONSUMER PRICE INDEX -- CANADA, 1949 - 1966  
(1949 = 100)

Year	Food	Hous- ing	Cloth- ing	Transpor- tation	Health and Personal Care	Recreation and Reading	Tobacco and Alcohol	Year	Food	Hous- ing	Cloth- ing	Transpor- tation	Health and Personal Care	Recreation and Reading	Tobacco and Alcohol
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1958	122.1	129.0	109.7	133.8	145.4	138.4	110.6
1950	102.6	104.1	99.7	105.4	101.8	102.0	102.7	1959	121.1	131.4	109.9	138.4	150.2	141.7	114.0
1951	117.0	113.7	109.8	113.0	111.0	109.7	111.5	1960	122.2	132.7	110.9	140.3	154.5	144.3	115.8
1952	116.8	118.0	111.8	117.4	117.8	115.7	113.3	1961	124.0	133.2	112.5	140.6	155.3	146.1	116.3
1953	112.6	120.0	110.1	119.2	120.1	116.7	108.0	1962	126.2	134.8	113.5	140.4	158.3	147.3	117.8
1954	112.2	121.6	109.4	120.0	124.5	119.5	107.3	1963	130.3	136.2	116.3	140.4	162.4	149.3	118.1
1955	112.1	122.4	108.0	118.5	126.7	122.6	107.4	1964	132.4	138.4	119.2	142.0	167.6	151.8	120.2
1956	113.4	124.2	108.6	123.3	130.0	125.3	107.7	1965	135.9	140.9	121.4	147.3	175.5	154.3	122.3
1957	118.6	126.7	108.5	129.9	138.2	129.8	109.4	1966	144.5	144.7	126.0	150.8	180.9	158.7	125.1

Table 70

CONSUMER PRICE INDEXES FOR REGIONAL CITIES -- CANADA, 1949 - 1966  
(1949 = 100)

Year	St. John's Nfld	Halifax	Saint John	Montreal	Ottawa	Toronto	Winnipeg	Saskatoon Regina	Edmonton Calgary	Vancouver
1949	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	102.1	103.3	103.7	103.1	103.1	103.8	102.2	103.8	103.9	103.6
1951	112.1	114.1	116.1	115.3	115.4	114.6	111.7	113.5	114.3	114.3
1952	103.5	115.3	117.4	117.6	116.8	117.5	116.1	112.8	114.8	117.4
1953	102.2	113.2	115.3	116.3	115.0	116.8	114.4	113.1	114.0	116.1
1954	102.8	114.1	116.6	116.8	116.2	118.3	115.3	114.2	114.9	117.4
1955	104.2	114.8	117.7	116.9	117.2	118.8	115.9	114.6	114.6	117.9
1956	106.8	116.1	118.8	118.4	119.2	120.6	117.2	115.8	115.7	119.6
1957	109.4	119.8	122.6	121.8	123.2	125.2	120.0	119.1	118.8	122.6
1958	112.0	122.9	125.3	125.5	125.5	128.6	123.0	122.0	121.4	125.6
1959	114.3	125.9	127.7	126.9	126.9	128.9	123.7	123.1	123.0	127.9
1960	115.5	127.2	129.2	127.9	128.6	130.4	125.6	124.4	124.1	129.0
1961	116.7	128.5	130.2	129.3	130.2	131.2	127.5	125.4	125.0	129.4
1962	117.6	130.2	131.4	130.9	131.7	132.4	129.1	127.5	126.2	129.8
1963	120.0	131.5	133.4	133.0	134.0	134.6	130.3	128.5	127.6	131.8
1964	121.3	132.0	134.8	135.1	136.0	136.9	132.3	129.8	128.2	132.7
1965	123.1	134.4	136.9	138.0	138.4	140.2	135.3	131.9	130.1	135.2
1966	126.0	138.0	140.4	142.1	143.7	146.4	139.4	135.8	134.4	138.5

## WHOLESALE PRICES

Table 71

GENERAL WHOLESALE PRICE INDEX -- CANADA, 1929 - 1966  
(1935 - 1939 = 100)

Year	Index	Year	Index	Year	Index	Year	Index	Year	Index	Year	Index
1929	124.6	1936	96.8	1943	127.9	1949	198.3	1955	218.9	1961	233.3
1930	112.9	1937	107.7	1944	130.6	1950	211.2	1956	225.6	1962	240.0
1931	94.0	1938	102.0	1945	132.1	1951	240.2	1957	227.4	1963	244.6
1932	86.9	1939	99.2	1946	138.9	1952	226.0	1958	227.8	1964	245.4
1933	87.4	1940	108.0	1947	163.3	1953	220.7	1959	230.6	1965	250.4
1934	93.4	1941	116.4	1948	193.4	1954	217.0	1960	230.9	1966	259.5
1935	94.4	1942	123.0								

Table 72

SELECTED PRICE INDICATORS - GENERAL WHOLESALE INDEX AND PRINCIPAL COMPONENTS -- CANADA, 1956 - 1966  
(1935 - 1939 = 100)

Year	General Wholesale Index	Vegetable Products	Animal Products	Textile Products	Wood Products	Iron Products	Non-Ferrous Metals Products	Non-Metallic Minerals Products	Chemical Products
1956	225.6	197.3	227.7	230.2	303.7	239.8	199.2	180.8	180.1
1957	227.4	197.0	238.4	236.0	299.4	252.7	176.0	189.3	182.3
1958	227.8	198.1	250.7	229.0	298.5	252.6	167.3	188.5	183.0
1959	230.6	199.5	254.3	228.0	304.0	255.7	174.6	186.5	187.0
1960	230.9	203.0	247.6	229.8	303.8	256.2	177.8	185.6	188.2
1961	233.3	203.1	254.7	234.5	305.1	258.1	181.6	185.2	188.7
1962	240.0	211.6	262.5	241.2	315.8	256.2	192.1	189.1	190.5
1963	244.6	227.8	255.6	248.0	323.4	253.6	197.5	189.5	189.3
1964	245.4	223.3	250.8	248.4	330.9	256.4	205.9	190.9	191.2
1965	250.4	218.4	270.7	246.6	334.0	264.5	217.6	191.6	200.2
1966	250.5	225.9	296.2	251.5	337.8	268.0	229.9	193.7	207.1

POPULATION, BIRTHS, MARRIAGES, DEATHS, AND RATES -- ALBERTA  
1905 - 1966

Year	Population	No. of Births -	Birth Rate Per 1,000 Population	No. of Marriages	Marriage Rate Per 1,000 Population	No. of Deaths*	Death Rate Per 1,000 Population	Infantile Death Rate Per 1,000 Live Births	Maternal Death Rate Per 1,000 Live Births	Rate of Natural Increase Per 1,000 Population
1905		421		187		114				
1906	165,000	3,003	16.2	927	5.0	1,091	5.9	90.0		10.3
1907	236,000	4,732	20.1	1,907	8.1	1,578	6.7	100.3	6.3	13.4
1908	266,000	5,973	22.5	2,032	7.6	2,188	8.2	126.6	6.0	14.3
1909	301,000	6,887	22.9	2,384	7.9	2,662	8.8			14.1
1910	336,000	8,321	24.8	3,088	9.2	3,526	10.5	129.5	8.6	14.3
1911	374,000	8,813	23.6	3,630	9.7	3,618	9.7	134.5	9.8	13.9
1912	400,000	10,284	25.7	4,429	11.1	4,232	10.6	124.8	8.3	15.1
1913	429,000	11,871	27.7	5,053	11.8	4,432	10.3	120.5	7.1	17.4
1914	459,000	13,685	29.8	4,623	10.1	4,417	9.6	100.5	6.1	20.2
1915	480,000	13,452	28.0	4,202	8.8	3,588	7.5	87.9	5.8	20.5
1916	496,000	13,331	26.9	4,230	8.5	4,058	8.2	90.5	7.2	18.7
1917	508,000	13,376	26.7	4,270	8.4	4,047	8.0	87.3	6.5	18.7
1918	522,000	14,890	28.5	4,048	7.8	7,924	15.2	107.1	5.5	13.3
1919	541,000	14,130	26.1	4,718	8.7	5,507	10.2	110.3	6.4	15.9
1920	565,000	16,565	29.3	5,110	9.0	5,675	10.0	93.7	8.3	19.3
1921	588,000	16,561	28.2	4,661	7.9	4,940	8.4	84.0	6.7	19.8
1922	592,000	16,163	27.3	4,272	7.2	5,264	8.9	91.3	6.9	18.4
1923	593,000	15,060	25.4	4,117	6.9	5,006	8.4	94.2	5.6	17.0
1924	597,000	14,597	24.5	4,159	7.0	4,858	8.1	84.1	6.2	16.4
1925	602,000	14,924	24.8	4,355	7.2	4,697	7.8	75.4	5.8	17.0
1926	608,000	14,456	23.8	4,503	7.4	5,159	8.5	85.3	5.9	15.3
1927	633,000	14,897	23.5	4,707	7.4	5,059	8.0	74.5	6.4	15.5
1928	658,000	15,692	23.8	5,776	8.8	5,699	8.7	76.5	6.8	15.1
1929	684,000	16,924	24.7	6,004	8.8	6,239	9.1	77.4	7.3	15.6
1930	708,000	17,649	24.9	5,334	7.5	5,496	7.8	63.6	6.5	17.1
1931	732,000	17,252	23.6	5,142	7.0	5,302	7.2	60.4	5.0	16.4
1932	740,000	16,990	23.0	5,054	6.8	5,521	7.5	58.7	3.8	15.5
1933	750,000	16,123	21.5	5,389	7.2	5,346	7.1	50.9	4.5	14.4
1934	758,000	16,236	21.4	6,053	8.0	5,337	7.0	54.9	5.0	14.4
1935	765,000	16,183	21.2	6,010	7.9	5,729	7.5	57.8	4.3	13.7
1936	773,000	15,786	20.4	6,020	7.8	6,147	8.0	59.5	5.8	12.4
1937	776,000	15,903	20.5	6,345	8.2	6,261	8.1	62.5	4.8	12.4
1938	781,000	15,891	20.3	6,973	8.9	5,871	7.5	51.1	4.3	12.8
1939	786,000	16,470	21.0	7,838	10.0	5,789	7.4	46.3	3.6	13.6
1940	790,000	17,359	22.0	8,782	11.1	6,203	7.9	48.0	4.0	14.1
1941	796,000	17,308	21.7	8,470	10.6	6,385	8.0	50.8	3.1	13.7
1942	776,000	16,317	23.6	9,034	11.6	6,091	7.8	38.0	2.3	15.8
1943	785,000	19,290	24.6	7,771	9.9	6,524	8.3	42.0	2.7	16.3
1944	808,000	19,372	24.0	7,299	9.0	6,320	7.8	45.9	1.6	16.2
1945	808,000	19,939	24.7	7,310	9.0	6,454	8.0	43.2	2.4	16.7
1946	803,000	22,184	27.6	9,478	11.8	6,601	8.2	42.6	1.4	19.4
1947	825,000	24,631	29.9	8,797	10.7	6,543	7.9	37.1	0.9	22.0
1948	854,000	24,075	28.2	8,844	10.4	6,987	8.2	38.6	1.2	20.0
1949	885,000	24,935	28.2	9,037	10.2	7,083	8.0	33.0	1.0	20.2
1950	913,000	25,625	28.1	9,294	10.2	6,856	7.5	32.4	0.7	20.6
1951	939,000	27,003	28.8	9,305	9.9	7,167	7.6	32.9	0.6	21.2
1952	973,000	29,105	29.9	9,514	9.8	7,345	7.5	30.2	0.5	22.4
1953	1,012,000	31,376	31.0	10,126	10.0	7,646	7.6	29.6	0.7	23.4
1954	1,057,000	33,593	31.8	9,960	9.4	7,520	7.1	26.3	0.3	24.7
1955	1,091,000	34,357	31.5	9,844	9.0	7,956	7.3	25.8	0.4	24.2
1956	1,123,000	34,951	31.1	9,965	8.9	7,786	6.9	24.6	0.4	24.2
1957	1,164,000	35,718	30.7	10,117	8.7	8,255	7.1	27.0	0.3	23.6
1958	1,206,000	36,842	30.5	10,186	8.4	8,237	6.8	25.0	0.5	23.7
1959	1,248,000	38,080	30.5	10,402	8.3	8,481	6.8	24.0	0.4	23.7
1960	1,291,000	39,009	30.2	10,482	8.1	8,888	6.9	26.0	0.2	23.3
1961	1,332,000	38,914	29.2	10,474	7.9	8,863	6.7	27.0	0.2	22.5
1962	1,370,000	38,804	28.3	10,423	7.6	9,264	6.8	25.0	0.4	21.5
1963	1,405,000	38,467	27.4	10,163	7.2	9,444	6.7	23.6	0.3	20.7
1964	1,432,000	36,173	25.3	10,634	7.4	9,482	6.6	23.9	0.2	18.7
1965	1,451,000	32,664	22.5	11,029	7.6	9,534	6.6	24.0	0.1	15.9
1966**	1,463,000	30,195	20.6	11,827	8.1	9,682	6.6			

Exclusive of Stillbirths

Preliminary



*Alberta's parks and campsites offer  
the finest year-round recreation.*





# LABOUR

Co-operation between management and labour is requisite to industrial harmony. To promote harmony it has been government practice in Alberta to discuss beforehand with labour, management and interested public bodies all changes or amendments either in the Labour Act or in the orders and regulations issued pursuant to the Act. Consequently, labour legislation in Alberta represents a consensus of the interested and affected groups, and is conducive to the maintenance of industrial peace.

The Alberta Labour Act consists of six sections relating to hours of work, minimum wages, vacations with pay, industrial standards, conciliation and arbitration, and equal pay. The seventh, a general section, relates to administration. The Act applies to all employers and employees, with the exception of municipal constables, farm labourers and domestic servants in private homes, and their employers. In practice the Board of Industrial Relations administers the Act.

Alberta's record of industrial peace is an indication of the soundness of the Alberta Labour Act and of its acceptance by employers, employees, and the public. According to the federal Department of Labour records, covering a period of many years, the proportion of man-days lost through work stoppages in relation to total man-days worked is lower in Alberta than in any other province. Since 1952 there have been only eighty legal strikes. Illegal work stoppages, except for minor incidents, are almost unknown.

There is little doubt that this history of industrial peace is an encouraging factor, influencing potential investors.

Alberta has a well established apprentice training program covering many trades. Apprentices are indentured to employers who provide on-the-job training and experience. Currently, financial support is given by the federal Department of Manpower and Immigration under the terms of the Adult Occupational Training Act, 1967.

The Alberta Apprenticeship Act (1944) makes obligatory government consideration of requests, initiated by interested groups of employees and employers, that for a specified trade an apprenticeship training program be organized. When it is agreed that the trade and demand for tradesmen so warrant, the act enables the planning for and carrying on of the training program. There are 28 designated trades for which training is provided. The trade courses are periodically reviewed by advisory committees consisting of employers, employees, instructors and apprenticeship supervisors.

To the end of 1966, 13,328 apprentices had graduated with Completion of Apprenticeship Certificates. A further 7,130 apprentices were indentured in the designated trades.

The Training Branch of the federal Department of Manpower and Immigration coordinates provincial standards for certain trades. Tradesmen of one province who meet these standards are automatically recognized as qualified tradesmen in other provinces. As of mid-1967 over 3,200 Alberta journeymen had been awarded the Red Seal certification signifying interprovincial acceptability. Red Seal certification presently applies to 12 trades.

The following table provides information concerning the apprentice training program and certification of tradesmen in Alberta. Minimum education requirements may be waived if the candidate can pass a set evaluative examination.

Table 74

LENGTH OF APPRENTICESHIP PERIOD, MINIMUM EDUCATIONAL REQUIREMENTS  
AND TYPE OF CERTIFICATION GRANTED, BY TRADE  
ALBERTA - JUNE, 1967

Trade	Length of Apprenticeship in Years	Technical Training weeks per year, for the following years				Minimum Education Required (Grade)	Journeyman Voluntary Ticket	Certification Compulsory Ticket	Red Seal Certification Available
		1st	2nd	3rd	4th				
Appliance Serviceman	4	6	6	6	6	10	x	-	-
Auto Body Mechanic	4	5	5	5	4	9	x	x	x
Baker	3	8	8	8	-	10	-	-	-
Bricklayer	4	8	8	-	8	9	x	-	x
Carpenter	4	8	8	8	8	9	x	-	x
Communication Electrician	4	8	8	8	8	10	-	-	-
Construction Electrician	4	8	8	8	12	10	-	x	x
Cook	3	8	8	8	-	9	x	-	-
Gasfitter	3	4	-	3	-	9	-	x	-
Glass Worker	4	6	6	6	6	10	-	-	-
Heavy Duty Mechanic	4	8	8	6	6	9	-	x	x
Iron Worker	4	6	6	6	6	10	-	-	-
Lather	3	4	4	6	-	9	x	-	-
Machinist	4	8	8	8	8	10	x	-	x
Millwright	4	Home Study				9	x	-	x
Motor Mechanic	4	8	8	8	8	9	-	x	x
Painter and Decorator	4	6	6	6	6	9	x	-	-
Partsman	3	8	6	6	-	10	-	-	-
Plasterer	4	6	-	6	6	9	x	-	-
Plumber	4	6	6	6	6	9	-	x	x
Power Electrician	4	8	8	8	8	10	-	-	-
Radio Technician	4	8	8	8	8	10	-	x	x
Refrigeration Mechanic	4	8	8	8	8	9	-	x	x
Roofer	3	6	6	6	-	9	-	-	-
Sheet Metal Mechanic	4	10	8	8	8	9	-	x	x
Steamfitter	4	6	6	6	6	9	-	x	-
Tile Setter	4	6	-	6	6	9	x	-	-
Welder	3	6	6	6	-	9	-	x	-

Vocational and composite high schools have been established throughout the province. Vocational courses offered prepare students for further training or for direct entry into industry and business. In addition to high schools, various other institutions offer a selection of pre-employment courses. Information pertaining to schools and courses may be secured from the Chief Superintendent of Schools, Department of Education, or directly from the schools concerned.

The Department of Agriculture operates agricultural vocational schools at Olds, Vermilion and Fairview. Programs are designed to serve the farm youth of the agricultural industry. Information pertaining to courses is available from the Department of Agriculture.

The Southern Alberta Institute of Technology in Calgary, and the Northern Alberta Institute of Technology in Edmonton, offer a wide selection of technical courses. In addition, emphasis is given to apprentice training for the 28 designated skilled trades. There are also post-high school programs for the preparation of technicians. Information as to curricula and costs of the technical courses may be secured from the Director of Vocational Education, Department of Education or, as to trades training, from the Director of Apprenticeship, Department of Labour.

These schools prepare the individual for gainful employment and ensure to

industry and business an adequate supply of well-trained manpower. Educational authorities have received advice and assistance in the designing and development of programs from members of the business and industrial community.

In addition to these, a number of privately operated trade and correspondence schools offer courses within the province, after receiving clearance as to adequacy of course content from the Department of Industry and Development.

The number of labour union locals in Alberta and the membership reported is as shown in the table. Membership figures are not comparable from year to year as some of the union locals do not report regularly. However, the figures do give some indication of union strength.

The following table indicates Alberta 1967 hourly wage rates for certain types of jobs. Current wage rates for a wider range of jobs, and information pertaining to working conditions and benefits, as well as "fringe benefit costs," by industry, may be obtained on request from the Alberta Bureau of Statistics.

Table 75 UNIONS AND MEMBERSHIP  
REPORTED, ALBERTA,  
SPECIFIED YEARS, 1943-1966

	Union Locals No.	Locals Reporting No.	Members Reported No.
1943	299	284	28,975
1946	315	289	33,662
1949	360	331	41,550
1952	373	337	44,450
1955	411	362	52,500
1958	414	384	62,289
1961	404	367	60,500
1964	411	399	62,600
1966	391	385	68,873

Table 76  
HOURLY WAGE RATES, SPECIFIED JOBS  
ALBERTA - 1967

	Calgary and Zone \$	Edmonton and Zone \$	Lethbridge \$	Medicine Hat and Suffield \$	Red Deer and Penhold \$	Other Points \$
Boilermakers on construction	3.75	3.75	3.75	3.75	3.75	3.75
Bricklayers & Stonemasons	3.50	3.50	3.10	3.30	3.25	3.25
Carpenters & Joiners	3.45	3.40	3.20	2.75	2.85	2.60
Electricians (inside wiremen)	3.55	3.50	3.10	2.75	3.15	3.00
Grader Operators	2.80	2.80	2.70	2.70	2.70	2.70
Insulation Mechanics	3.00	3.00	3.00	3.00	3.00	3.00
Labourers	2.40	2.40	2.00	1.70	2.15	1.75
Lathers (wood, wire, metal)	3.25	3.50	2.70	2.50	2.75	2.65
Linoleum Layers	2.40	3.10	2.15	1.70	2.25	1.75
Oilers - Servicemen (Industrial & Commercial)	2.65	2.65	2.65	2.65	2.65	2.65
Operators (draglines, cranes, shovels & pile drivers)	3.25	3.25	3.25	3.25	3.25	3.25
Painters (brush)	2.95	2.75	2.60	2.30	2.40	2.40
Painters (spray)	3.15	3.00	2.75	2.50	2.60	2.60
Pipelayers (caulkers & solderers)	2.50	2.45	2.20	1.75	2.15	1.85
Plasterers	3.25	3.55	2.90	2.50	3.20	2.80
Plumbers & Steamfitters	3.65	3.70	3.00	2.65	3.00	2.70
Riggers (General)	2.40	2.40	2.05	1.70	-	1.75
Rodmen (reinforcing)	2.93	3.00	2.93	2.93	3.00	3.00
Roofers (built-up)	2.55	2.65	2.25	1.80	2.35	1.95
Sheet Metal Workers	3.20	3.65	2.85	2.60	3.00	2.70
Structural Steel Erectors	3.75	3.75	3.75	3.75	3.75	3.75
Tractor Operators (large)	2.80	2.80	2.70	2.70	2.70	2.70
Truck Drivers	2.45	2.45	2.05	1.75	2.20	1.80
Watchmen	1.50	1.50	1.40	1.35	1.40	1.35
Welders & Burners (acetylene or electric)	2.80	2.80	2.50	2.50	2.40	2.40
Welders & Burners (steel erection)	2.95	2.95	2.95	2.95	-	2.95



The table gives an indication of the size and broad occupational breakdown of Alberta's labour force. Figures from 1911 to 1961 are based on census data. The figures for 1941, 1951, 1961 are strictly comparable; those for 1911 - 1931 are comparable with later figures for all practical purposes. The 1966 figures are estimates.

Table 77 NUMERICAL AND PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE,  
BY INDUSTRY OR OCCUPATION, ALBERTA, 1911 - 1966

Year	Forestry, Fishing and Agricultural Industries		Service Occupations		Mining, Manufacturing and Construction Industries		Total	
	No.	%	No.	%	No.	%	No.	%
1911	82,100	50.8	41,468	25.7	38,043	23.5	161,610	100.0
1921	114,874	53.2	65,707	30.4	35,424	16.4	216,005	100.0
1931	148,253	51.8	88,346	30.9	49,449	17.3	286,015	100.0
1941	145,252	50.5	104,901	36.4	37,678	13.1	287,831	100.0
1951	117,601	33.3	167,517	47.4	68,379	19.3	353,497	100.0
1961	107,196	21.9	285,388	58.3	96,927	19.8	489,511	100.0
1966	100,000	17.8	333,000	59.2	129,000	23.0	562,000	100.0

In 1941, about one-half of the labour force was engaged in agriculture, forestry and fishing; by 1951, the proportion was down to one-third, while in 1961, it was a little over one-fifth. Currently, less than one-fifth is so engaged. The proportion in the service occupations rose from about 36 to 59 per cent over the period.

During the ten year period 1941 to 1951, the number engaged in forestry, fishing and agriculture decreased by almost 28,000; employment in the mining, manufacturing and construction industries increased by over 30,000; and in the service occupations by over 62,000.

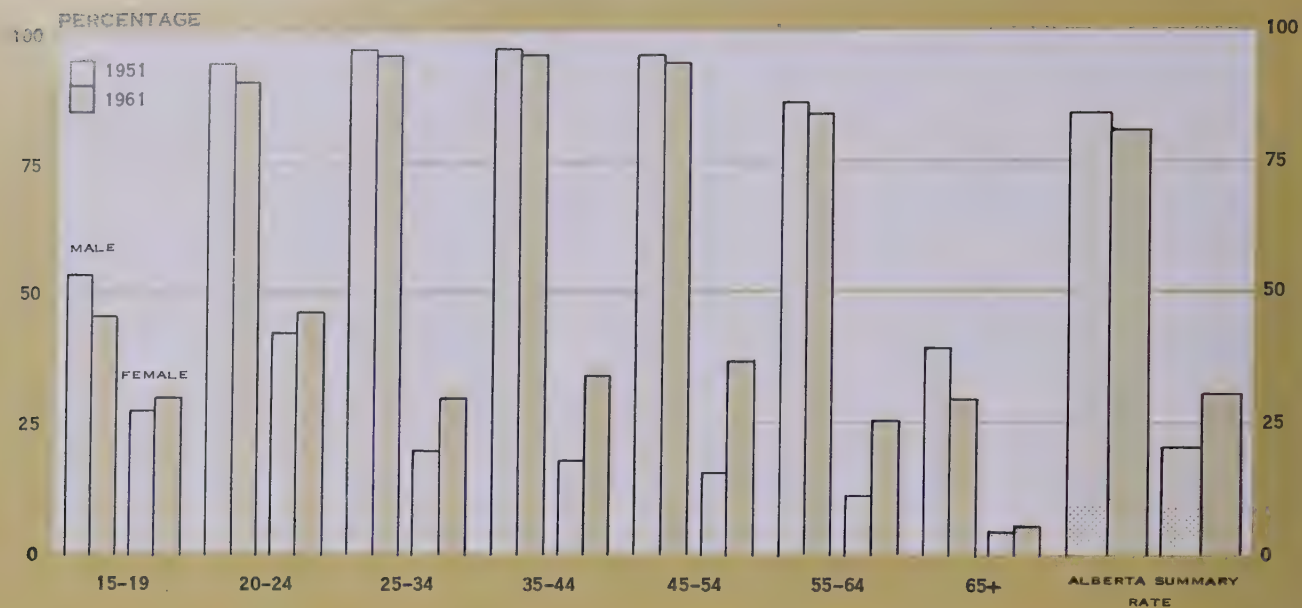
Occupational shifts were even more pronounced during the decade 1951 - 1961. The number engaged in the mining, manufacturing and construction industries and in the service occupations increased by 28,000 and 118,000 respectively. Figures for 1966 have been estimated.

The labour force comprises those persons in a population 15 years of age and over who are either employed, or unemployed but actively seeking work. The "participation rate" is the proportion the labour force bears to a total population. A "population," in this context, comprises all persons in an age group, or all persons of one sex, or all persons.

The changes in male and female participation rates are noteworthy.

Participation rates of most male age groups were lower in 1961 than in 1951. Decreases were most pronounced in the age groups, 15 to 19, 20 to 24, and 65 plus. Presumably the increased emphasis of employers on the educational qualifications of their employees has been a major factor in deterring many in the 15 to 19 age group from entering the labour force until such time as they have acquired adequate skills. A complementary factor is the realization by young people that higher incomes can be obtained only through better training and education.

Retirement at age 65 is becoming mandatory in more and more firms and organizations. The increasing number of pension plans and a greater accumulation of other forms of retirement capital have made possible retirement at an earlier age. These factors combined with fewer jobs available for older workers, have induced or allowed more and more men to withdraw completely from the labour force by or after age 65.



LABOUR FORCE, MALE AND FEMALE PARTICIPATION RATES, BY AGE GROUPS, ALBERTA - 1951 AND 1961



LABOUR FORCE BY INDUSTRY DIVISIONS, ALBERTA - 1941, 1951 AND 1961

Table 78 POPULATION, LABOUR FORCE, PARTICIPATION RATES, BY AGE GROUP, MALE  
ALBERTA, 1951 - 1961

	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
1951								
Population	37,882	38,333	74,053	63,370	51,657	41,225	38,727	346,247
Number in Labour Force	20,350	36,120	71,917	62,538	49,201	35,643	15,162	290,931
Participation Rate (%)	53.72	94.23	97.12	97.15	95.25	86.46	39.15	84.02
1961								
Population	50,296	44,403	100,414	87,593	67,212	48,052	40,850	448,420
Number in Labour Force	23,135	40,317	95,931	83,957	63,071	40,389	15,161	361,961
Participation Rate (%)	46.00	90.80	95.54	95.85	93.84	84.05	29.82	80.65

The Department of Education records indicate that, as compared with 1951, more of those leaving the regular school system in 1961 did so with further education in mind. The records also indicate the complementary decline in the number finding or seeking immediate employment.

Table 79 PUPILS LEAVING SCHOOL SYSTEM, CLASSIFIED ACCORDING TO DECLARED  
INTENTIONS OF OBTAINING FURTHER TRAINING, EMPLOYMENT,  
OR OTHERWISE\* -- ALBERTA, 1951-1961

	MALE				FEMALE			
	1951		1961		1951		1961	
	No.	%	No.	%	No.	%	No.	%
Total Leaving School:	4,755	100.00	6,756	100.00	4,529	100.00	6,225	100.00
To Further Training	691	14.53	2,046	30.28	1,474	32.55	2,146	34.47
To Employment	3,860	81.18	3,199	47.35	2,543	56.15	1,925	30.93
Otherwise	204	4.29	1,511	22.37	512	11.30	2,154	34.60

\* "Otherwise" includes marriage, leaving province, physical disability and "unknown".

The participation rates of women in the labour force have shown a quite different pattern. Increases are noted in all age groups, but are particularly marked in age groups over 25. The participation rates of married women are strongly influenced not only by employment opportunities but by the changing social mores which by 1961 has removed the social stigma from families with both adults working. The availability of part-time jobs, especially in the developing service industries, enables married women to contribute to the family income and still have time for housekeeping responsibilities.

Table 80 POPULATION, LABOUR FORCE, PARTICIPATION RATES, BY AGE GROUP, FEMALE  
ALBERTA, 1951 - 1961

	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
1951								
Population	36,059	37,194	74,613	59,110	40,823	30,433	28,216	306,448
Number in Labour Force	10,033	15,864	14,968	10,509	6,448	3,542	1,202	62,566
Participation Rate (%)	27.82	42.65	20.06	17.78	15.80	11.64	4.26	20.42
1961								
Population	48,708	44,751	92,157	85,030	61,335	35,591	42,228	413,800
Number in Labour Force	14,765	20,948	27,651	29,274	22,690	10,037	2,185	127,550
Participation Rate (%)	30.31	46.81	30.00	34.43	36.99	25.35	5.17	30.82

Changes in the size and composition of the labour force reflect new patterns of job opportunities. Between 1951 and 1961 the number of men engaged in agriculture declined by 21,000; of those engaged in the mining, manufacturing and construction industries rose by 23,000; and of those in the service industries rose by 62,000. In



contrast the number of females engaged in the agriculture industry rose by 10,000; of those engaged in mining, manufacturing and construction rose by 8,000; and of those in service industries rose by 47,000.

Since 1940 the Alberta economy has been stimulated by the high and stable prices for agricultural products, by the investments and expenditures in the various phases of the oil industry, by the general buoyancy of North American demand for raw materials and products, by demand generated through the large influx of immigrants from other provinces and Europe who were attracted by, and who in turn helped generate, boom conditions, and by the wave of manufacturing industries established to serve the growing local and national markets. The interactions of these various growth factors induced demands on the labour pool for a variety of occupational skills.

Although there have been structural changes — the buoyancy of the economy has ensured that members of the labour force affected have experienced little difficulty in obtaining employment in, and adapting to, other occupations and industries: unemployment has been consistently lower than the national average.

Firms establishing in Alberta have readily found capable staff. The apprenticeship program and the technical and vocational schools have ensured a continuing supply of skilled workers. Under the Adult Occupational Training Act additional emphasis is now being placed on the training of even greater numbers.



*Alberta Government Telephones' microwave tower at Grande Prairie.*

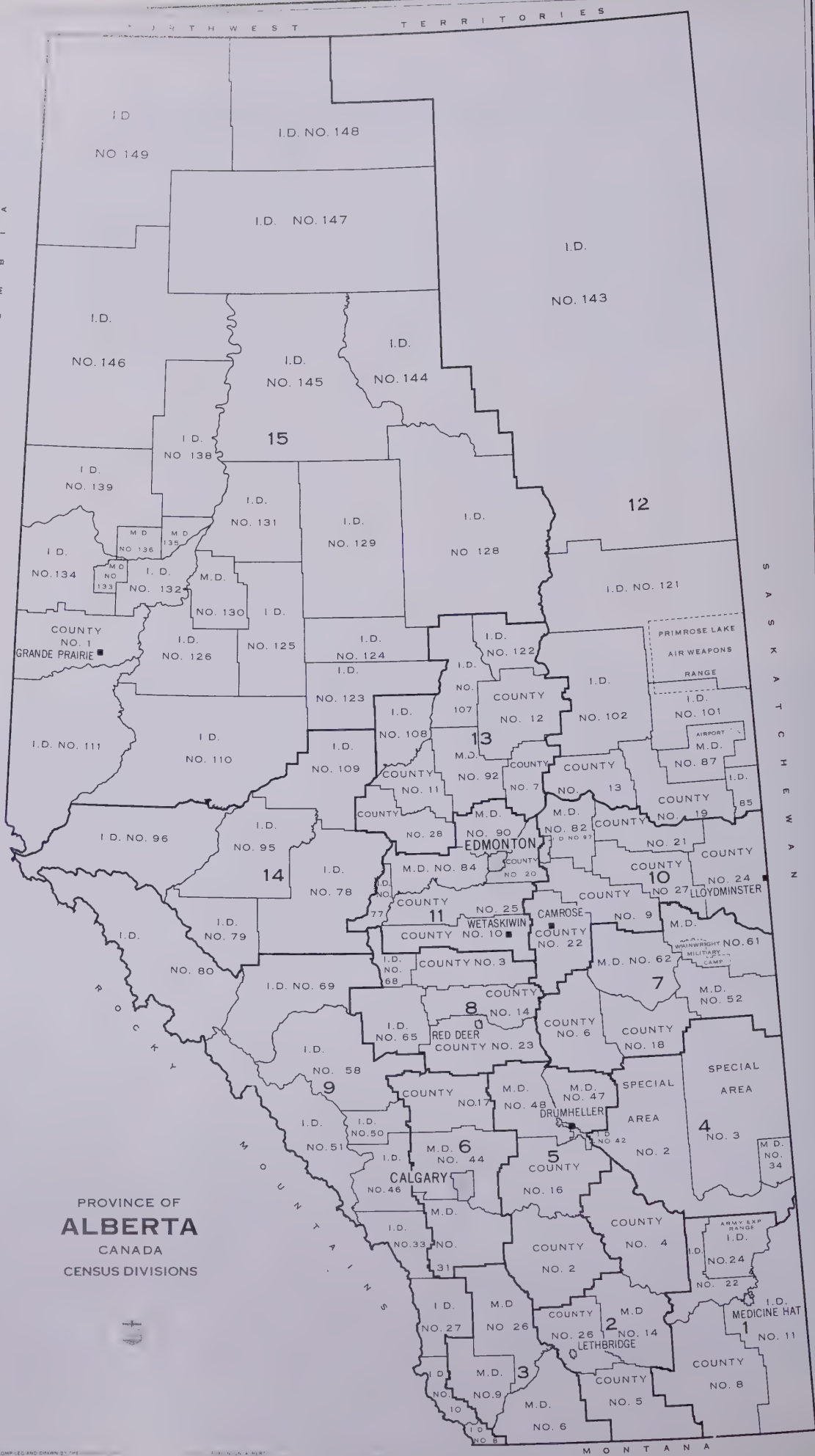
# CENSUS DATA

In the following pages are some key census data on the province. Census material 1966 is used as available at time of publication. Only 1961 data are available concerning families, racial origin, language spoken, birthplace, religion, and labour force; new data on these topics will be available only following the 1971 census of Canada.

B R I T I S H  
C O L U M B I A

N O R T H W E S T  
T E R R I T O R I E S

S A S K A T C H E W A N



PROVINCE OF  
**ALBERTA**  
CANADA  
CENSUS DIVISIONS



Table 81

POPULATION, BY CENSUS DIVISIONS - ALBERTA  
1956 - 1961 - 1966

Census Division	1956		1961		1966	
	No.	Percent of Total	No.	Percent of Total	No.	Percent of Total
1	34,496	3.1	39,140	2.9	38,858	2.7
2	74,991	6.7	83,306	6.3	82,719	5.7
3	30,426	2.7	30,967	2.3	29,592	2.0
4	14,294	1.3	15,020	1.1	14,224	1.0
5	38,120	3.4	38,115	2.9	35,987	2.5
6	237,886	21.2	317,989	23.9	369,140	25.2
7	40,214	3.6	40,837	3.1	40,833	2.8
8	64,168	5.7	76,533	5.7	83,912	5.7
9	17,239	1.5	20,274	1.5	18,195	1.2
10	71,500	6.3	70,177	5.3	70,211	4.8
11	323,539	28.8	410,679	30.8	476,053	32.5
12	44,947	4.0	47,310	3.6	50,635	3.5
13	45,033	4.0	45,431	3.4	44,142	3.0
14	15,846	1.4	19,282	1.4	20,358	1.4
15	70,417	6.3	76,884	5.8	88,344	6.0
TOTAL	1,123,116	100.0	1,331,944	100.0	1,463,203	100.0

Table 82

NUMERICAL AND PERCENTAGE DISTRIBUTION OF POPULATION  
BY RURAL AND URBAN, ALBERTA, 1901 - 1966

Year	Total No.	Rural No.	Percent of Total	Urban No.	Percent of Total
1901	73,022	61,171	83.8	11,851	16.2
1911	374,295	264,359	70.6	109,936	29.4
1921	588,454	411,284	69.9	177,170	30.1
1931	731,605	503,723	68.9	227,882	31.1
1941	796,169	545,564	68.5	250,605	31.5
1951	939,501	509,413	54.2	430,088	45.8
1961	1,331,944	480,368	36.1	851,576	63.9
1966	1,463,203	455,796	31.2	1,007,407	68.8

POPULATION AND DENSITY OF POPULATION FOR CENSUS DIVISIONS  
ALBERTA, 1956, 1961 and 1966

Census Division	Land Area in Square Miles	Population - 1956		Population - 1961		Population - 1966	
		Population No.	Density No.	Population No.	Density No.	Population No.	Density No.
1	8,079	34,496	4.27	39,140	4.84	38,858	4.81
2	6,991	74,991	10.73	83,306	11.92	82,719	11.83
3	4,794	30,426	6.35	30,967	6.46	29,592	6.17
4	8,474	14,294	1.69	15,020	1.77	14,224	1.68
5	6,476	38,120	5.89	38,115	5.89	35,987	5.56
6	4,946	237,886	48.10	317,989	64.29	369,140	74.63
7	7,581	40,214	5.30	40,837	5.39	40,833	5.39
8	5,655	64,168	11.35	76,533	13.53	83,912	14.84
9	17,775	17,239	0.97	20,274	1.14	18,195	1.02
10	8,167	71,500	8.75	70,177	8.59	70,211	8.60
11	5,578	323,539	58.00	410,679	73.62	476,053	85.34
12	50,242	44,947	0.89	47,310	0.94	50,635	1.01
13	9,378	45,033	4.80	45,431	4.84	44,142	4.71
14	11,980	15,846	1.32	19,282	1.61	20,358	1.70
15	92,684	70,417	0.76	76,884	0.83	88,344	0.95
Alberta	248,800	1,123,116	4.51	1,331,944	5.35	1,463,203	5.88

Table 84      POPULATION OF CITIES, TOWNS AND VILLAGES, AND PERCENTAGE  
OF TOTAL POPULATION, ALBERTA  
1901 - 1966

	Population			Percent of Total Population		
	Cities No.	Towns No.	Villages No.	Cities %	Towns %	Villages %
1901	4,091	9,518	4,924	5.60	13.03	6.74
1911	90,252	25,881	21,529	24.11	6.91	5.75
1921	147,246	50,145	25,513	25.02	8.52	4.34
1931	194,203	50,155	34,150	26.54	6.86	4.67
1941	215,894	53,623	37,069	27.12	6.74	4.66
1951	342,002	98,565	47,621	36.40	10.49	5.07
1961	636,684	206,992	51,223	47.80	15.54	3.85
1966	829,559	173,182	47,970	56.69	11.84	3.28

Table 85 AREA AND DENSITY OF POPULATION FOR INCORPORATED CITIES  
AND TOWNS OF 2,000 PERSONS AND OVER, ALBERTA, 1966

	1966 Population	Area in Square Miles	Persons Per Square Mile
Calgary	330,575	155.80	2,122
Camrose	8,362	3.87	2,161
Drumheller	3,574	0.42	8,510
Edmonton	376,925	85.60	4,403
Grande Prairie	11,417	3.43	3,329
Lethbridge	37,186	13.97	2,662
Medicine Hat	25,574	23.20	1,102
Red Deer	26,171	12.96	2,019
Wetaskiwin	6,008	2.33	2,579
Barrhead	2,592	0.69	3,757
Bonnyville	2,237	0.97	2,306
Brooks	3,354	2.16	1,553
Cardston	2,721	1.75	1,555
Claresholm	2,569	1.03	2,494
Coaldale	2,541	1.13	2,249
Drayton Valley	3,352	1.53	2,191
Edson	3,788	2.18	1,738
Fort MacLeod	2,709	5.70	475
Fort McMurray	2,614	3.22	812
Fort Saskatchewan	4,152	3.56	1,166
Hanna	2,633	0.71	3,708
High Prairie	2,241	0.71	3,156
High River	2,239	1.06	2,112
Hinton	4,307	5.50	783
Innisfail	2,531	1.27	1,993
Lacombe	3,035	1.50	2,023
Leduc	2,856	2.10	1,360
Olds	2,999	1.11	2,702
Peace River	4,087	2.25	1,816
Pincher Creek	2,882	.82	3,515
Ponoka	4,421	2.47	1,790
Redcliff	2,141	3.76	569
Rocky Mountain House	2,446	1.56	1,568
St. Albert	9,736	6.05	1,609
Stettler	3,988	1.55	2,573
St. Paul	3,543	1.87	1,895
Taber	4,584	2.53	1,812
Vegreville	3,598	2.06	1,747
Vermilion	2,685	2.20	1,220
Wainwright	3,867	2.60	1,487
Westlock	2,685	1.50	1,790
Whitecourt	2,279	10.00	228



Table 86

POPULATION OF INCORPORATED CITIES, TOWNS AND VILLAGES  
ALBERTA, 1931 - 1966

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961	1966
Acme	V	5	234	285	275	328	335
Airdrie	V	6	198	191	267	524	778
Alberta Beach	V	13	38	59	79	135	143
Alix	V	8	241	360	461	631	636
Alliance	V	7	260	233	281	291	291
Amisk	V	7	-	-	-	127	134
Andrew	V	10	115	326	625	601	525
Arrowwood	V	5	293	251	222	195	174
Athabasca	T	13	573	578	1,068	1,487	1,551
Barons	V	2	284	233	369	345	270
Barrhead	T	13	222	399	1,243	2,286	2,592
Bashaw	T	10	385	494	603	614	697
Bassano	T	2	615	582	624	815	827
Bawlf	V	10	183	227	236	203	220
Beaverlodge	T	15	211	331	514	897	1,083
Beiseker	V	6	230	240	325	360	404
Bellevue	V	9	-	-	-	1,323	1,174
Bentley	V	8	233	279	439	588	637
Berwyn	V	15	-	206	288	347	430
Betula Beach	V	11	-	-	-	7	-
Beverly	T	11	1,111	981	2,159	9,041	-
Big Valley	V	7	455	291	307	461	378
Bittern Lake	V	10	47	50	25	76	80
Black Diamond	T	6	683	890	1,154	1,043	858
Blackfalds	V	8	84	113	154	477	729
Blackie	V	6	251	223	224	184	156
Blairmore	T	9	1,629	1,731	1,933	1,980	1,779
Bon Accord	V	11	-	-	-	-	147
Bonnyville	T	12	362	603	1,139	1,736	2,237
Bonnyville Beach	V	12	-	-	-	-	1
Botha	V	7	107	111	98	112	134
Bowden	V	8	233	234	277	437	610
Bow Island	T	1	314	291	653	1,122	1,160
Bowness	T	6	-	-	2,922	9,184	-
Boyle	V	13	-	-	-	346	437
Breton	V	11	-	-	-	428	447
Brooks	T	2	708	888	1,648	2,827	3,354
Bruderheim	V	10	280	237	387	299	290
Burdett	V	1	121	123	118	229	207
Calgary	C	6	83,761	88,904	129,060	249,641	330,575
Calmar	T	11	-	-	944	700	600
Camrose	C	10	2,258	2,598	4,131	6,939	8,362
Canmore	V	9	-	-	-	-	1,445
Carbon	V	5	355	409	374	371	374
Cardston	T	3	1,672	1,864	2,487	2,801	2,721
Carmangay	V	5	279	229	285	297	246
Caroline	V	8	-	-	-	321	294
Carstairs	V	6	387	371	468	665	761
Castor	T	7	634	625	798	1,025	1,090
Cayley	V	6	127	133	139	146	133

City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Cereal	V	4	185	142	135	195	191
Champion	V	5	310	320	378	419	357
Chauvin	V	7	269	343	340	395	362
Chinook	V	4	176	142	116	114	95
Chipman	V	10	284	240	180	174	183
Claresholm	T	3	1,156	1,265	1,608	2,143	2,569
Clive	V	8	215	224	241	251	238
Cluny	V	5	134	138	202	174	171
Clyde	V	13	186	160	219	259	256
Coaldale	T	2	251	290	806	2,592	2,541
Cochrane	V	6	293	298	530	857	819
Cold Lake	T	12	-	-	-	1,307	1,289
Coleman	T	9	1,704	1,870	1,961	1,713	1,507
Consort	V	4	299	265	396	557	594
Coronation	T	7	738	581	738	864	811
Coutts	V	2	-	-	-	469	427
Cowley	V	3	151	125	119	127	163
Craigmyle	V	5	236	186	136	107	98
Cremona	V	6	-	-	-	221	191
Crossfield	V	6	321	409	443	593	582
Crystal Springs	V	11	-	-	-	13	13
Czar	V	7	140	139	123	196	222
Daysland	T	7	404	438	475	539	632
Delburne	V	8	193	308	395	450	391
Delia	V	5	286	315	278	287	274
Derwent	V	10	107	171	233	281	261
Devon	T	11	-	-	842	1,418	1,283
Dewberry	V	10	-	-	-	179	198
Didsbury	T	6	801	892	1,180	1,254	1,586
Donalda	V	7	169	206	318	289	271
Donnelly	V	15	-	-	-	289	249
Drayton Valley	T	11	-	-	-	3,854	3,352
Drumheller	C	5	2,987	2,748	2,601	2,931	3,574
Duchess	V	2	114	149	258	218	233
Eckville	V	8	169	135	379	580	716
Edberg	V	10	131	132	188	179	167
Edgerton	V	7	189	258	309	295	345
Edmonton	C	11	79,197	93,817	159,631	281,027	376,925
Edmonton Beach	V	11	-	-	-	20	41
Edson	T	14	1,547	1,499	1,956	3,198	3,788
Elk Point	T	12	-	307	453	692	726
Elnora	V	8	153	195	211	214	191
Empress	V	4	314	341	411	405	360
Entwistle	V	11	189	218	-	411	345
Evansburg	V	14	-	-	-	452	472
Fairview	T	15	260	432	929	1,506	1,884
Falher	T	15	253	244	575	741	843
Ferintosh	V	10	161	169	205	174	156
Foremost	V	1	-	-	375	561	554
Forestburg	V	7	291	231	443	677	669
Forest Lawn	T	6	-	899	1,079	12,263	-
Fort Assiniboine	V	13	-	-	-	216	187
Fort Macleod	T	3	1,447	1,912	1,860	2,490	2,709
Fort McMurray	T	12	-	-	926	1,186	2,614

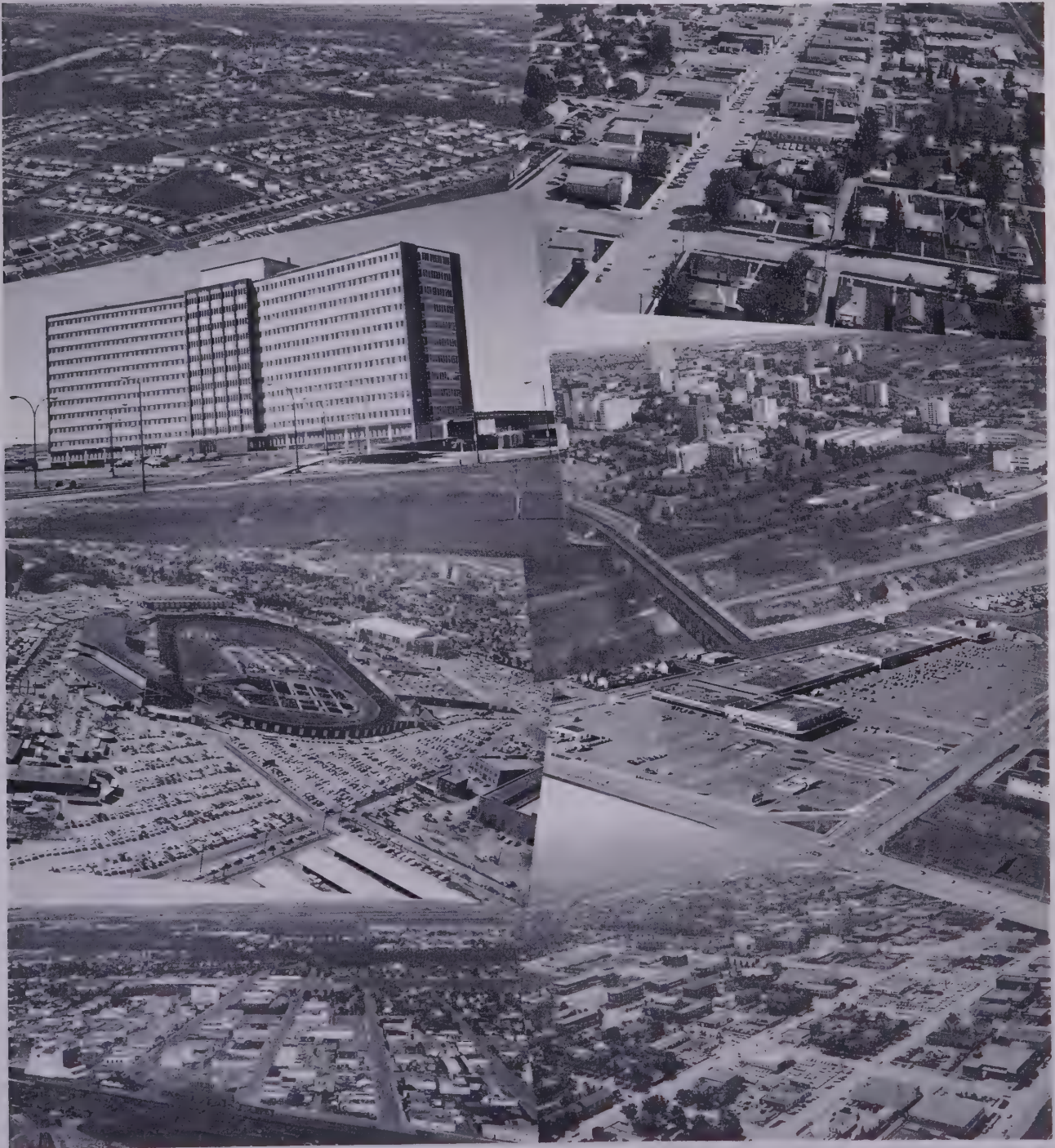
City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Fort Saskatchewan	T	11	1,001	903	1,076	2,972	4,152
Frank	V	9	268	204	239	223	178
Gadsby	V	7	144	141	128	98	84
Galahad	V	7	150	145	198	231	174
Gibbons	V	11	-	-	-	192	230
Girouxville	V	15	-	-	-	318	305
Gleichen	T	5	514	435	430	426	411
Glendon	V	12	-	-	-	315	350
Glenwood	V	3	-	-	-	274	194
Golden Days	V	11	-	-	-	-	6
Grand Centre	T	12	-	-	-	1,493	1,731
Grande Prairie	C	15	1,464	1,724	2,664	8,352	11,417
Granum	T	3	329	238	327	290	295
Grassy Lake	V	2	-	-	167	274	226
Grimshaw	T	15	137	169	564	1,095	1,376
Gull Lake	V	8	-	21	32	40	48
Hairy Hill	V	10	-	-	205	173	136
Halkirk	V	7	160	118	148	172	177
Hanna	T	4	1,490	1,622	2,027	2,645	2,633
Hardisty	T	7	428	457	536	582	597
Hay Lakes	V	10	125	154	231	233	196
Heisler	V	7	125	-	-	214	214
High Level	T	15	-	-	-	-	708
High Prairie	T	15	-	-	1,141	1,756	2,241
High River	T	6	1,459	1,430	1,888	2,276	2,239
Hill Spring	V	3	-	-	-	243	190
Hines Creek	V	15	-	-	-	398	418
Hinton	T	14	-	-	-	3,529	4,307
Holden	V	10	230	361	504	556	503
Hughenden	V	7	191	164	218	294	274
Hussar	V	5	151	116	120	213	235
Hythe	V	15	278	247	342	449	445
Innisfail	T	8	1,024	1,223	1,417	2,270	2,531
Innisfree	V	10	227	253	287	291	314
Irma	V	7	196	273	369	425	430
Irricana	V	6	161	172	180	167	104
Irvine	T	1	234	240	224	240	209
Island Lake	V	13	-	-	-	12	9
Itaska Beach	V	11	-	-	-	2	1
Jasper Place	T	11	-	-	9,139	30,530	-
Kapasiwin	V	11	-	-	-	2	-
Killam	T	7	326	347	465	552	866
Kinuso	V	15	-	-	238	323	376
Kitscoty	V	10	280	234	235	326	364
Lac La Biche	T	12	313	517	905	1,314	1,490
Lacombe	T	8	1,259	1,603	2,277	3,029	3,035
Lakeview	V	11	-	-	15	12	2
Lamont	V	10	507	438	637	705	835
Lavoy	V	10	151	178	122	131	118
Leduc	T	11	900	871	1,842	2,356	2,856
Legal	V	11	350	462	523	524	572
Lethbridge	C	2	13,489	14,612	22,947	35,454	37,186
Linden	V	5	-	-	-	-	210
Lloydminster (part)	C	10	539	572	1,706	2,944	3,767



City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Lodgepole	T	11	-	-	-	508	207
Lomond	V	5	176	129	153	244	215
Longview	V	6	-	-	-	-	173
Lougheed	V	7	218	195	186	217	252
Magrath	T	3	1,224	1,207	1,320	1,338	1,220
Ma-Me-O-Beach	V	11	-	-	98	142	103
Manning	T	15	-	-	-	896	1,179
Mannville	V	10	307	396	528	632	683
Marwayne	V	10	-	-	-	379	351
Mayerthorpe	T	13	159	217	472	663	916
McLennan	T	15	-	-	1,074	1,078	1,104
Medicine Hat	C	1	10,300	10,571	16,364	24,484	25,574
Milk River	T	2	350	335	481	801	861
Millet	V	11	300	325	402	403	418
Milo	V	5	135	129	141	167	154
Minburn	V	10	119	129	186	164	143
Mirror	V	8	534	570	635	577	433
Montgomery	T	6	-	-	-	5,077	-
Morinville	T	11	570	580	892	935	995
Morrin	V	5	149	216	226	316	272
Mundare	T	10	832	756	596	603	564
Munson	V	5	164	139	78	82	39
Myrnam	V	10	131	216	388	441	460
Nakamun Park	V	13	-	-	-	-	2
Nampa	V	15	-	-	-	271	288
Nanton	T	3	739	718	934	1,054	940
New Norway	V	10	142	169	258	263	220
New Sarepta	V	11	-	-	-	184	173
Nobleford	V	2	143	111	255	309	345
Norglenwold	V	8	-	-	-	-	23
Okotoks	T	6	760	591	767	1,043	922
Olds	T	6	1,056	1,337	1,617	2,433	2,999
Onoway	V	13	149	156	189	302	375
Oyen	T	4	401	326	433	780	846
Paradise Valley	V	10	-	-	-	-	174
Peace River	T	15	864	873	1,672	2,543	4,087
Penhold	V	8	125	183	174	319	370
Picture Butte	T	2	-	-	865	978	1,013
Pincher Creek	T	3	1,024	994	1,456	2,961	2,882
Plamondon	V	12	-	-	-	-	195
Point Allison	V	11	-	-	-	6	7
Ponoka	T	8	836	1,306	2,574	3,938	4,421
Provost	T	7	533	518	676	1,022	1,328
Radway	V	13	-	-	184	183	158
Raymond	T	2	1,849	2,089	2,279	2,362	1,950
Redcliff	T	1	1,192	1,111	1,538	2,221	2,141
Red Deer	C	8	2,662	3,448	7,575	19,612	26,171
Redwater	T	13	-	-	1,306	1,135	1,041
Rimbey	T	8	304	410	757	1,266	1,502
Rochon Sands	V	7	-	-	-	28	2
Rockyford	V	5	194	201	246	288	281
Rocky Mountain House	T	8	646	800	1,147	2,360	2,446
Rosalind	V	10	-	-	-	-	222
Rosemary	V	2	-	-	-	210	221

City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Ross Haven	V	13	-	-	-	-	17
Rumsey	V	5	83	90	110	123	108
Rycroft	V	15	-	-	372	500	539
Ryley	V	10	236	323	406	469	438
St. Albert	T	11	825	697	1,129	4,059	9,736
St. Paul	T	12	938	1,018	1,407	2,823	3,543
Sandy Beach	V	13	-	-	-	4	20
Sangudo	V	13	-	173	269	325	314
Seba Beach	V	11	41	84	103	113	155
Sedgewick	T	7	338	320	485	655	760
Sexsmith	V	15	304	325	331	531	491
Silver Beach	V	11	-	-	-	14	31
Slave Lake	T	15	-	-	-	468	1,716
Smoky Lake	T	12	366	430	491	626	871
Spirit River	T	15	232	276	553	890	1,034
Spruce Grove	V	11	76	-	-	465	598
Standard	V	5	218	212	237	266	264
Stavely	T	3	303	273	327	349	292
Stettler	T	7	1,219	1,295	2,442	3,638	3,988
Stirling	V	2	376	437	520	468	390
Stony Plain	T	11	497	566	878	1,311	1,397
Strathmore	T	5	523	560	704	924	994
Strome	V	7	172	233	276	311	239
Sundre	T	6	-	-	337	853	831
Sunset Point	V	13	-	-	-	14	18
Swan Hills	T	15	-	-	-	643	1,414
Sylvan Lake	T	8	416	805	985	1,381	1,332
Taber	T	2	1,279	1,331	3,042	3,951	4,584
Thorhild	V	13	-	-	248	312	430
Thorsby	V	11	-	-	385	491	583
Three Hills	T	5	581	706	1,026	1,491	1,452
Tilley	V	2	-	193	259	257	250
Tofield	T	10	497	551	692	905	952
Torrington	V	5	-	-	-	-	130
Trochu	T	5	506	480	630	671	780
Turner Valley	V	6	656	676	719	702	625
Two Hills	T	10	149	210	525	826	1,056
Val Quentin	V	13	-	-	-	-	8
Valleyview	T	15	-	-	-	1,077	1,827
Vauxhall	T	2	-	-	393	942	934
Vegreville	T	10	1,659	1,696	2,223	2,908	3,598
Vermilion	T	10	1,270	1,408	1,982	2,449	2,685
Veteran	V	4	180	190	206	239	278
Viking	T	10	492	491	683	1,043	1,146
Vilna	V	12	151	311	378	400	344
Vulcan	T	5	803	732	1,040	1,310	1,505
Wainwright	T	7	1,147	980	1,996	3,351	3,867
Wanham	V	15	-	-	-	251	235
Warburg	V	11	-	-	-	285	407
Warner	V	2	342	296	422	472	446
Warspite	V	12	-	-	-	153	119
Waskatenau	V	12	-	237	239	305	274
Wembley	V	15	183	188	251	303	299
West Cove	V	13	-	-	-	-	6

City (C), Town (T) or Village (V)			Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Westlock	T	13		536	590	1,111	1,838	2,685
Wetaskiwin	C	11		2,125	2,318	3,824	5,300	6,008
Whitecourt	T	14		-	-	-	1,054	2,279
Wildwood	V	14		-	-	405	479	403
Willingdon	V	10		250	420	281	429	419
Yellowstone	V	13		-	-	-	-	3
Youngstown	V	4		372	188	352	321	357



*Alberta — Canada's growth province.*



## POPULATION BY SPECIFIED AGE GROUPS, FOR CENSUS DIVISIONS AND SELECTED CITIES, ALBERTA, 1966

	Age Groups											
	Total	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-69	70+
Alberta	1,463,203	173,568	179,540	157,658	128,999	102,005	186,681	184,532	145,224	100,986	35,195	68,815
Division No. 1	38,858	4,003	4,430	4,148	3,565	2,286	4,403	4,800	4,584	3,108	1,106	2,425
Division No. 2	82,719	9,064	9,735	9,431	7,995	5,240	9,019	9,816	8,598	6,845	2,468	4,508
Division No. 3	29,592	3,397	3,785	3,614	2,902	1,823	2,869	3,053	3,043	2,416	916	1,774
Division No. 4	14,224	1,611	1,721	1,691	1,284	834	1,456	1,784	1,525	1,058	340	920
Division No. 5	35,987	3,883	4,197	4,179	3,397	2,131	3,513	4,225	4,208	2,980	1,116	2,158
Division No. 6	369,140	43,504	44,677	36,754	29,939	27,089	52,148	50,390	36,147	23,163	8,077	17,252
Division No. 7	40,833	4,523	4,863	4,855	3,888	2,324	4,119	4,657	4,639	3,199	1,102	2,664
Division No. 8	83,912	9,531	10,431	9,440	8,042	5,401	9,653	9,646	8,881	6,375	2,255	4,257
Division No. 9	18,195	1,868	2,003	1,802	1,598	1,313	2,059	2,389	2,046	1,695	557	865
Division No. 10	70,211	7,206	7,701	7,880	6,625	3,835	6,840	7,993	8,430	6,451	2,274	4,976
Division No. 11	476,053	57,511	58,446	49,388	40,961	36,980	66,161	62,788	45,286	29,779	9,972	18,751
Division No. 12	50,635	7,124	7,271	6,269	4,702	3,033	6,189	5,533	4,235	3,089	1,132	2,058
Division No. 13	44,142	4,833	5,291	5,369	4,206	2,178	4,350	5,305	4,696	4,004	1,470	2,440
Division No. 14	20,358	2,768	2,799	2,334	1,663	1,356	2,794	2,475	1,742	1,258	480	689
Division No. 15	88,344	12,742	12,190	10,504	8,232	6,182	11,078	9,678	7,164	5,566	1,930	3,078
Calgary	330,575	39,419	40,052	32,386	26,442	24,897	48,158	45,764	31,755	19,690	6,877	15,135
Edmonton (City)	376,925	45,046	44,619	37,498	32,298	31,754	53,683	49,925	36,090	23,347	7,720	14,945
Edmonton (Metro)	401,299	48,955	48,839	40,472	34,254	32,845	57,622	53,476	37,569	23,981	7,924	15,362
Grande Prairie	11,417	1,553	1,459	1,220	1,073	981	1,603	1,281	917	582	236	512
Lethbridge	37,186	3,685	3,937	3,881	3,497	2,440	4,096	4,544	4,117	3,223	1,236	2,530
Medicine Hat	25,574	2,544	2,740	2,472	2,338	1,539	2,846	3,074	2,942	2,203	886	1,990
Red Deer	26,171	3,031	3,254	2,845	2,653	2,211	3,620	3,083	2,485	1,500	465	1,024

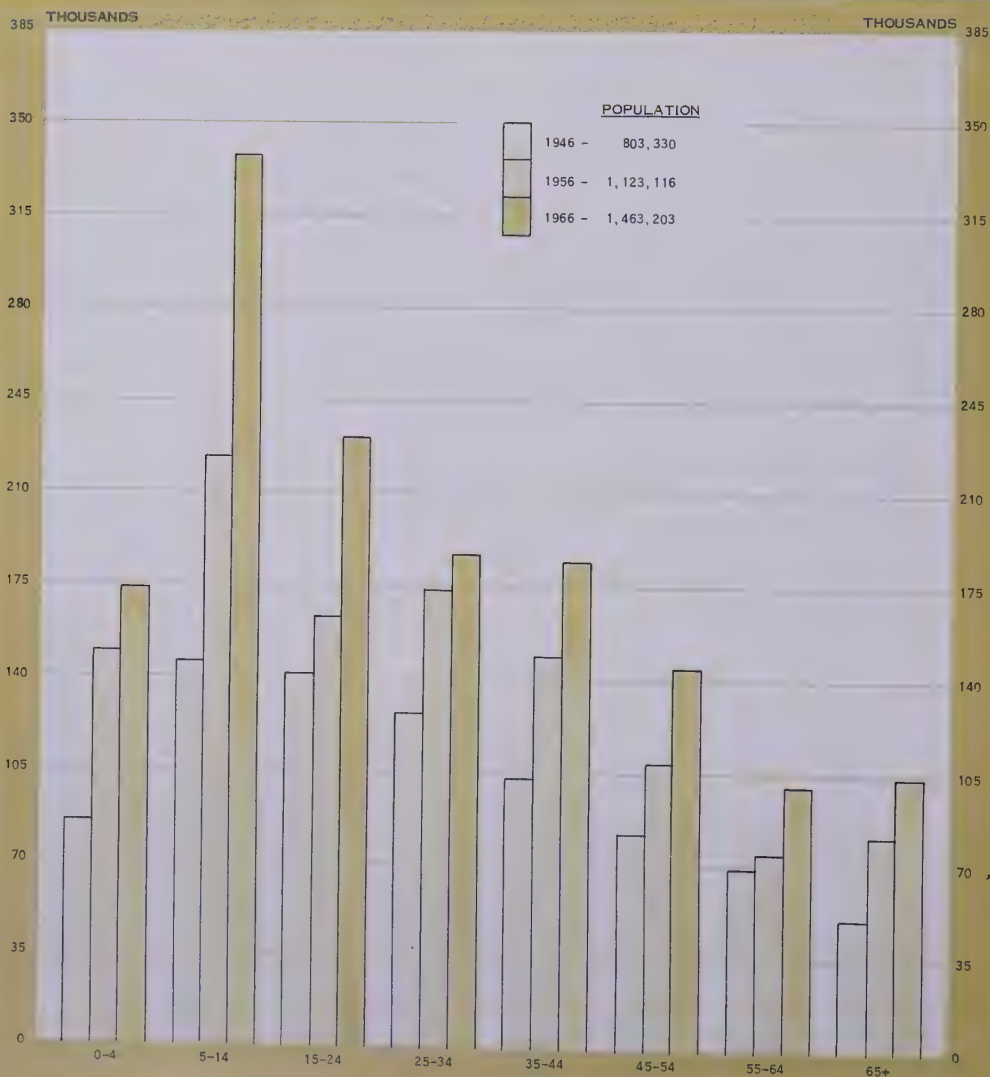


Table 88

POPULATION FOR CENSUS DIVISIONS, URBAN SIZE GROUPS,  
RURAL NON-FARM AND RURAL FARM, ALBERTA, 1966

		URBAN							RURAL			
		Total	100,000 and Over	30,000 to 99,999	10,000 to 29,999	5,000 to 9,999	2,500 to 4,999	1,000 to 2,499	Total	Non-farm	Farm	
Alberta		1,463,203	1,007,407	711,369	37,186	63,162	40,129	94,068	61,493	455,796	178,198	277,598
Division No. 1		38,858	28,875	-	-	25,574	-	-	3,301	9,983	3,044	6,939
Division No. 2		82,719	50,628	-	37,186	-	-	10,479	2,963	32,091	10,663	21,428
Division No. 3		29,592	12,101	-	-	-	-	10,881	1,220	17,491	6,144	11,347
Division No. 4		14,224	2,633	-	-	-	-	2,633	-	11,591	4,440	7,151
Division No. 5		35,987	6,531	-	-	-	-	3,574	2,957	29,456	14,117	15,339
Division No. 6		369,140	337,399	330,575	-	-	-	2,999	3,825	31,741	13,689	18,052
Division No. 7		40,833	10,273	-	-	-	-	7,855	2,418	30,560	11,383	19,177
Division No. 8		83,912	41,438	-	-	26,171	-	9,987	5,280	42,474	15,991	26,483
Division No. 9		18,195	11,306	-	-	-	-	5,401	5,905	6,889	6,149	740
Division No. 10		70,211	20,614	-	-	-	12,129	6,283	2,202	49,597	14,616	34,981
Division No. 11		476,053	418,183	380,794	-	-	22,083	10,360	4,946	57,870	24,402	33,468
Division No. 12		50,635	18,821	-	-	-	5,917	6,157	6,747	31,814	14,510	17,304
Division No. 13		44,142	7,869	-	-	-	-	5,277	2,592	36,273	10,043	26,230
Division No. 14		20,358	10,374	-	-	-	-	8,095	2,279	9,984	5,177	4,807
Division No. 15		88,344	30,362	-	-	11,417	-	4,087	14,858	57,982	23,830	34,152

Table 89

NUMBER AND AREA OF CENSUS-FARMS AND COMMERCIAL FARMS, 1961 AND 1966,  
BY CENSUS DIVISION, ALBERTA

	Census-farms				Commercial farms			
	Number 1961 No.	1966 No.	Area 1961 acres	1966 acres	Number 1961 No.	1966 No.	Area 1961 acres	1966 acres
Alberta	73,212	69,411	47,228,653	48,982,875	45,203	48,971	37,241,021	40,986,692
Division No. 1	2,165	2,132	4,222,478	4,145,678	1,850	1,868	3,780,155	3,600,431
Division No. 2	4,735	4,481	4,043,002	4,305,202	3,921	3,787	3,429,665	3,606,585
Division No. 3	2,646	2,496	2,951,319	2,816,571	1,979	1,981	2,345,927	2,340,473
Division No. 4	2,126	1,927	4,935,844	5,069,536	1,725	1,723	4,450,611	4,695,928
Division No. 5	4,333	3,860	3,939,429	3,960,778	3,755	3,556	3,680,949	8,694,673
Division No. 6	4,838	4,581	3,056,530	3,060,170	3,516	3,569	2,720,237	2,833,580
Division No. 7	5,199	4,799	4,434,321	4,440,971	3,910	4,096	3,854,752	4,184,323
Division No. 8	6,551	6,273	2,621,111	2,718,497	4,072	4,549	2,012,453	2,346,915
Division No. 9	175	177	294,041	284,403	74	103	162,752	179,175
Division No. 10	10,188	9,440	4,820,398	4,909,728	6,338	7,139	3,720,674	4,290,010
Division No. 11	8,512	8,395	2,617,538	2,802,269	4,558	5,169	1,739,649	2,107,157
Division No. 12	4,494	4,134	1,667,991	2,108,046	1,905	2,181	993,118	1,333,757
Division No. 13	7,322	6,827	2,723,431	2,864,093	3,378	4,073	1,622,820	2,085,462
Division No. 14	973	1,021	359,975	446,865	230	353	133,166	226,039
Division No. 15	8,955	8,868	4,341,245	5,050,068	3,992	4,824	2,594,093	3,462,184

Table 90

FAMILIES AND NUMBER OF PERSONS PER FAMILY, RURAL AND URBAN, BY CENSUS DIVISION  
ALBERTA, 1961

	Families	Persons In Families	Average Number of Persons Per Family	Number of Persons in Family						
				2	3	4	5	6	7	8+
Alberta	305,671	1,174,058	3.8	84,509	61,676	67,724	44,782	24,903	11,358	5,398
Rural	105,422	437,821	4.2	25,756	19,787	21,359	15,909	10,474	5,556	3,001
Farm	62,283	263,773	4.2	13,695	12,083	12,640	9,742	6,622	3,478	1,848
Non-Farm	43,139	174,048	4.0	12,061	7,704	8,719	6,167	3,852	2,078	1,153
Urban	200,249	736,237	3.7	58,753	41,889	46,365	28,873	14,429	5,802	2,397
Division No. 1	9,539	35,302	3.7	2,861	1,912	2,120	1,417	703	306	137
Division No. 2	19,158	75,007	3.9	5,255	3,734	4,035	2,858	1,664	826	406
Division No. 3	6,639	27,356	4.1	1,777	1,159	1,315	998	622	332	205
Division No. 4	3,308	13,190	4.0	891	595	676	512	341	148	83
Division No. 5	8,646	33,998	3.9	2,421	1,574	1,863	1,233	802	382	189
Division No. 6	76,528	277,803	3.6	22,819	16,212	18,127	10,832	5,207	1,981	777
Division No. 7	9,269	36,628	4.0	2,625	1,656	1,913	1,367	861	425	230
Division No. 8	15,923	66,105	3.9	4,601	3,312	3,600	2,543	1,473	726	345
Division No. 9	4,494	16,201	3.6	1,503	899	956	601	298	125	51
Division No. 10	16,258	62,752	3.8	4,651	3,168	3,380	2,317	1,474	692	290
Division No. 11	95,513	361,004	3.8	25,811	20,136	22,095	14,344	7,496	3,127	1,389
Division No. 12	9,510	42,452	4.5	2,058	1,740	1,827	1,318	1,000	586	410
Division No. 13	10,211	41,105	4.0	2,722	2,008	1,948	1,533	940	522	246
Division No. 14	4,085	16,680	4.1	984	789	871	628	383	223	94
Division No. 15	15,590	68,475	4.4	3,530	2,782	2,998	2,281	1,639	957	572

## POPULATION BY RACIAL ORIGIN FOR CENSUS DIVISIONS

Census Divisions	Total	British Isles Origins <sup>1</sup>	Other Europ-							
			French	Austrian N. O. S.	Czech and Slovak	Finnish	German	Hungarian	Italian	Jewish
1	39,140	14,138	952	279	205	52	14,029	320	290	119
2	83,306	32,821	1,901	835	2,676	169	12,865	3,603	1,389	148
3	30,967	15,207	1,148	153	275	46	3,740	269	175	7
4	15,020	7,070	397	79	92	12	3,360	54	13	1
5	38,115	17,719	1,392	274	445	120	6,377	544	416	50
6	317,989	183,340	12,473	3,173	2,139	601	37,638	4,710	5,133	1,882
7	40,837	20,052	1,871	295	292	31	8,199	222	76	2
8	76,533	41,923	2,850	406	568	1,081	9,423	640	345	37
9	20,274	8,828	793	281	1,105	99	1,503	313	1,337	9
10	70,177	21,880	1,979	1,459	432	24	7,755	285	62	101
11	410,679	180,568	28,836	6,581	2,571	894	57,912	3,292	4,894	1,944
12	47,310	9,964	11,642	532	280	116	2,030	106	281	14
13	45,431	14,414	3,792	564	608	244	7,644	298	201	2
14	19,282	7,819	1,708	170	173	67	2,831	114	212	20
15	76,884	26,012	11,585	823	587	106	8,008	523	201	17
Alberta Total	1,331,944	601,755	83,319	15,904	12,448	3,662	183,314	15,293	15,025	4,353
Percent of Total	100.0	45.18	6.26	1.19	.93	.28	13.76	1.15	1.13	.33
Calgary	249,641	147,030	9,528	2,673	1,728	510	26,917	4,168	4,720	1,856
Edmonton	281,027	129,977	17,246	4,537	1,748	547	34,385	2,225	4,425	1,767
Forest Lawn	12,263	5,138	651	135	147	22	2,471	197	167	9
Jasper Place	30,530	13,460	2,675	418	171	100	4,142	271	156	119
Lethbridge	35,454	17,193	878	502	1,099	69	3,284	1,497	897	128
Medicine Hat	24,484	9,542	646	157	111	22	8,752	179	199	119
Red Deer	19,612	11,048	954	138	111	110	2,178	162	142	18

(1) Includes English, Irish, Scottish, Welsh and Manx.

Table 92

## POPULATION BY OFFICIAL LANGUAGE AND MOTHER TONGUE FOR ALBERTA RURAL

	Total	Official Language				English	French	Chinese	Finnish	Gaelic
		English Only	French Only	English and French	Neither English nor French					
Alberta Total	1,331,944	1,253,824	5,534	56,920	15,666	962,319	42,276	5,774	1,905	463
Rural	488,733	454,171	3,481	22,151	8,930	315,948	21,026	581	1,038	131
Farm	285,823	267,356	2,331	12,573	3,563	180,317	12,916	59	687	72
Non-Farm	202,910	186,815	1,150	9,578	5,367	135,631	8,110	522	351	59
Urban	843,211	799,653	2,053	34,769	6,736	646,371	21,250	5,193	867	332
100,000 & Over	605,342	573,401	1,315	25,693	4,933	462,698	14,569	3,526	579	226
30,000-99,000	35,454	34,390	24	647	393	27,239	256	264	24	12
10,000-29,999	44,096	42,987	40	809	260	33,894	448	356	53	28
5,000- 9,999	23,535	22,769	49	609	108	18,206	436	191	17	6
2,500- 4,999	62,843	58,539	353	3,374	577	47,752	2,657	413	39	37
1,000- 2,499	71,941	67,567	272	3,637	465	56,582	2,884	443	155	23
Division No. 1	39,140	38,325	32	515	268	26,759	254	176	36	16
2	83,306	80,765	54	1,231	1,256	57,213	539	452	73	23
3	30,967	29,972	38	573	384	22,883	378	91	14	7
4	15,020	14,786	11	189	34	11,894	104	57	7	1
5	38,115	36,972	67	759	317	29,004	540	165	66	7
6	317,989	305,664	413	9,841	2,071	262,691	4,001	2,026	231	90
7	40,837	39,714	83	955	85	34,158	751	106	16	12
8	76,533	74,673	75	1,286	499	64,370	791	300	672	38
9	20,274	19,022	37	844	371	14,173	370	129	42	8
10	70,177	67,685	81	1,057	1,354	40,043	751	166	15	32
11	410,679	384,166	1,447	21,405	3,661	291,354	15,243	1,692	452	172
12	47,310	35,241	1,323	8,368	2,378	19,327	8,564	105	76	6
13	45,431	42,535	147	2,043	706	27,899	1,720	58	141	22
14	19,282	18,063	109	900	210	14,055	735	39	33	8
15	76,884	66,241	1,617	6,954	2,072	46,496	7,535	210	31	21



## AND INCORPORATED CITIES OF 10,000 AND OVER - ALBERTA, 1961

European Origins						Asiatic Origins			Other Origins		
Nether-lands	Polish	Russian	Scandin-avian <sup>2</sup>	Ukrain-ian	Other	Chinese	Japanese	Other	Indian and Eskimo	Negro	Other & Not Stated
1,329	745	1,791	2,295	665	998	193	87	31	49	3	570
7,131	1,958	1,475	6,572	2,494	2,448	620	2,601	45	665	4	886
1,199	337	817	2,820	340	322	109	101	7	3,789	4	102
345	517	612	1,507	523	254	70	5	21	39	-	49
1,994	713	903	3,787	872	542	202	16	14	1,548	7	180
13,098	6,169	5,018	19,193	8,511	5,659	2,407	492	485	976	327	4,565
1,156	870	618	5,167	1,005	651	114	-	8	33	2	173
3,871	1,135	818	8,225	1,543	1,165	358	25	23	1,460	29	608
470	988	257	995	649	622	151	41	16	1,381	1	235
1,370	3,615	494	8,583	20,332	1,104	182	13	8	137	12	350
16,140	15,419	3,651	23,810	43,601	8,107	2,070	298	862	3,701	643	4,885
447	1,975	232	1,978	10,849	590	119	3	228	5,547	17	360
1,576	3,001	341	2,902	7,540	725	65	15	26	1,055	202	216
905	714	244	1,651	1,520	632	41	17	31	215	48	150
4,499	2,383	681	6,394	5,279	1,148	236	7	40	7,959	8	388
55,530	40,539	17,952	95,879	105,923	24,967	6,937	3,721	1,845	28,554	1,307	13,717
4.17	3.04	1.35	7.20	7.95	1.87	.52	.28	.14	2.14	.10	1.03
8,682	5,106	3,584	13,983	7,075	4,621	2,232	456	445	335	233	3,759
9,953	11,197	2,276	14,526	32,526	5,891	1,805	230	712	995	491	3,568
761	417	324	788	487	284	35	11	4	16	29	170
1,879	899	334	2,112	2,437	494	97	18	67	140	75	466
1,837	1,037	448	2,165	1,358	1,035	413	838	33	22	2	719
659	415	869	1,066	478	559	171	36	30	15	3	456
1,094	300	170	1,666	634	297	214	6	7	49	4	310

(2) Includes Danish, Icelandic, Norwegian and Swedish.

## FARM, RURAL NON-FARM AND URBAN BY SIZE GROUPS AND FOR CENSUS DIVISIONS, 1961

## Mother Tongue

German	Indian and Eskimo	Italian	Japanese	Magyar	Nether-lands	Polish	Russian	Scandin-avian	Slovak	Ukrain-ian	Yiddish	Other
97,666	27,928	9,881	2,108	9,397	24,640	16,755	3,675	25,603	5,725	83,923	1,764	10,142
40,411	26,230	1,146	903	2,840	7,898	6,871	1,313	12,207	2,782	44,330	154	2,924
30,327	5,026	456	572	1,739	5,207	4,696	800	7,861	1,786	31,430	77	1,795
10,084	21,204	690	331	1,101	2,691	2,175	513	4,346	996	12,900	77	1,129
57,255	1,698	8,735	1,205	6,557	16,742	9,884	2,362	13,396	2,943	39,593	1,610	7,218
39,150	962	6,991	355	4,734	12,644	7,446	1,789	8,892	1,598	32,163	1,458	5,562
1,576	10	572	510	938	1,043	565	132	401	523	924	52	413
6,312	26	168	22	155	901	206	88	597	99	533	28	182
1,820	46	47	3	87	314	250	71	1,296	35	620	8	82
4,558	129	274	203	380	947	543	102	993	204	3,073	33	506
3,839	525	683	112	263	893	874	180	1,217	484	2,280	31	473
9,311	37	147	47	159	648	238	95	523	111	372	24	187
9,013	547	842	1,587	2,437	3,509	1,090	274	1,380	1,595	1,675	72	985
2,168	3,683	76	33	111	459	141	127	447	120	158	3	68
1,873	30	4	2	20	65	178	42	390	22	281	4	46
2,956	1,497	203	12	353	787	287	189	1,027	195	657	20	150
18,314	526	3,506	235	3,218	5,883	2,410	1,069	5,057	817	4,676	777	2,462
2,733	23	30	-	62	234	301	66	1,561	50	575	5	154
2,994	1,363	144	13	237	1,674	336	145	2,132	151	771	13	389
683	1,365	783	13	181	216	544	136	259	533	533	11	295
3,758	129	40	9	93	285	1,280	123	2,804	160	19,866	46	577
32,853	2,852	3,662	140	2,020	8,829	6,303	988	6,500	1,063	32,166	716	3,672
617	6,319	139	3	42	76	941	67	448	118	10,039	32	391
4,080	1,057	87	9	129	551	1,421	88	746	332	6,868	12	211
1,269	203	113	5	67	439	267	89	417	141	1,148	14	240
5,044	8,297	105	-	268	985	1,018	177	1,912	317	4,138	15	315

Table 33

## BIRTHPLACE OF ALBERTA POPULATION BY CENSUS DIVISION - 1961

	New- found- land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Sask- atchewan	Alberta	British Columbia	Yukon & Northwest Territories	West Canada
Census Division 1	24	56	212	100	140	1,045	865	5,280	21,971	484	16	30,193
Percent of Total	0.06	0.14	0.54	0.26	0.36	2.67	2.21	13.49	56.13	1.24	0.04	77.14
Census Division 2	49	66	371	166	312	2,051	1,657	6,174	47,287	2,147	31	60,311
Percent of Total	0.06	0.08	0.45	0.20	0.37	2.46	1.99	7.41	56.76	2.58	0.04	72.40
Census Division 3	7	45	156	64	141	853	403	1,439	22,330	511	10	25,959
Percent of Total	0.02	0.15	0.50	0.21	0.46	2.75	1.30	4.05	72.11	1.05	0.03	83.83
Census Division 4	5	21	54	27	64	550	245	1,369	9,731	147	5	12,218
Percent of Total	0.03	0.14	0.36	0.18	0.43	3.06	1.03	9.11	64.79	0.96	0.03	81.34
Census Division 5	15	66	220	86	208	1,188	733	2,102	24,965	532	14	30,134
Percent of Total	0.04	0.17	0.58	0.23	0.54	3.12	1.84	5.51	65.30	1.39	0.04	79.05
Census Division 6	474	910	3,146	1,722	3,466	18,377	13,516	30,957	159,273	9,842	221	241,904
Percent of Total	0.15	0.29	0.99	0.54	1.09	5.70	4.25	9.73	50.09	3.09	0.07	76.07
Census Division 7	14	72	190	126	309	1,657	618	2,589	27,477	459	21	33,532
Percent of Total	0.03	0.18	0.47	0.31	0.76	4.06	1.51	6.34	67.28	1.12	0.05	82.11
Census Division 8	55	122	398	234	452	3,042	1,686	5,295	49,143	1,601	47	62,075
Percent of Total	0.07	0.16	0.52	0.31	0.59	3.08	2.20	6.92	64.21	2.09	0.06	81.11
Census Division 9	23	36	288	108	205	696	590	1,217	10,986	794	14	14,957
Percent of Total	0.11	0.18	1.42	0.23	1.01	3.43	2.91	6.00	54.19	3.92	0.07	73.77
Census Division 10	12	55	205	66	288	1,603	843	6,012	47,010	567	18	56,679
Percent of Total	0.02	0.08	0.29	0.09	0.41	2.28	1.20	8.57	66.99	0.61	0.03	80.77
Census Division 11	448	731	2,743	1,529	4,561	16,666	13,060	28,905	240,651	8,424	801	318,519
Percent of Total	0.11	0.18	0.67	0.37	1.11	4.06	3.18	7.04	38.60	2.05	0.19	77.56
Census Division 12	63	70	389	297	1,497	1,595	646	2,105	33,357	790	134	40,943
Percent of Total	0.13	0.15	0.82	0.63	3.16	3.37	1.37	4.45	70.51	1.67	0.28	86.54
Census Division 13	17	62	136	62	353	977	477	1,303	30,938	462	26	35,013
Percent of Total	0.04	0.14	0.30	0.13	0.78	2.15	1.05	3.31	68.10	1.01	0.06	77.07
Census Division 14	17	31	93	78	296	683	453	1,800	11,185	577	13	15,226
Percent of Total	0.09	0.16	0.48	0.40	1.54	3.54	2.35	9.33	58.01	2.99	0.07	78.96
Census Division 15	20	68	261	202	1,915	1,931	2,116	5,450	51,730	1,737	102	65,532
Percent of Total	0.05	0.09	0.34	0.26	2.49	2.51	2.75	7.09	67.28	2.26	0.15	85.23
Alberta Total	1,243	2,411	8,862	4,867	14,207	52,914	37,913	102,197	788,034	29,074	1,473	1,043,195
Percent of Total	0.09	0.18	0.67	0.37	1.07	3.97	2.85	7.67	58.16	2.16	0.11	78.32

	United Kingdom	Other British Commonwealth Countries	United States	European Countries	Asiatic Countries	Other Countries	Total
Census Division 1	1,917	30	1,928	4,883	155	34	39,140
Percent of Total	4.96	0.08	4.92	12.47	0.40	0.09	100 %
Census Division 2	3,943	154	4,329	13,545	910	114	83,306
Percent of Total	4.73	0.18	5.20	16.26	1.09	0.14	100 %
Census Division 3	1,088	42	2,152	1,830	91	5	30,967
Percent of Total	3.51	0.14	6.95	5.26	0.29	0.02	100 %
Census Division 4	695	19	926	1,108	46	8	15,020
Percent of Total	4.63	0.13	6.16	7.28	0.31	0.05	100 %
Census Division 5	1,830	59	2,582	3,320	165	25	38,115
Percent of Total	4.80	0.16	6.78	8.71	0.43	0.06	100 %
Census Division 6	26,455	937	12,433	34,095	1,880	285	317,989
Percent of Total	8.32	0.30	3.91	10.72	0.59	0.09	100 %
Census Division 7	2,006	45	2,588	2,576	84	6	40,837
Percent of Total	4.91	0.11	6.34	6.31	0.21	0.01	100 %
Census Division 8	4,213	107	4,243	5,616	242	37	76,533
Percent of Total	5.30	0.14	5.54	7.24	0.32	0.05	100 %
Census Division 9	1,495	74	564	3,058	116	10	20,274
Percent of Total	7.37	0.37	2.78	15.03	0.57	0.05	100 %
Census Division 10	2,516	44	2,749	8,017	138	34	70,177
Percent of Total	3.38	0.06	3.62	11.42	0.20	0.05	100 %
Census Division 11	24,527	878	10,747	53,917	1,840	251	410,679
Percent of Total	5.97	0.21	2.62	13.13	0.45	0.06	100 %
Census Division 12	916	47	1,079	4,120	191	14	47,310
Percent of Total	1.84	0.10	2.28	8.71	0.40	0.03	100 %
Census Division 13	1,634	28	1,879	6,802	62	13	43,431
Percent of Total	3.60	0.06	4.13	14.97	0.14	0.03	100 %
Census Division 14	753	34	648	2,571	31	19	19,282
Percent of Total	3.91	0.16	3.26	13.23	0.16	0.10	100 %
Census Division 15	2,136	69	2,653	6,139	169	186	76,884
Percent of Total	2.78	0.09	3.45	7.99	0.22	0.24	100 %
Alberta Total	76,124	2,567	51,500	151,397	6,120	1,041	1,331,944
Percent of Total	5.71	0.19	3.87	11.37	0.46	0.08	100 %



Table 94 POPULATION, RELIGIOUS DENOMINATIONS, BY CENSUS DIVISIONS, ALBERTA, 1961

Census Divisions	Anglican Church of Canada	Baptist	Christian Reformed	Christian Science	Church of Christ Disciples	Confucian and Buddhist	Evangelical United Brethren	Greek Orthodox	Jehovah's Witnesses	Jewish	Lutheran	Mennonite	Mormon	Pentecostal	Presbyterian	Roman Catholic	Salvation Army	Ukrainian (Greek) Catholic	United Church of Canada	Other	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1	224	3,737	1,901	323	41	52	1,749	144	197	140	6,065	259	526	635	2,618	7,760	151	120	10,357	2,096	39,140
	.37	9.35	4.80	.85	.10	.13	4.47	.37	.80	.36	16.30	.66	1.34	1.62	6.69	16.83	.39	.31	36.46	5.35	160
2	168	7,054	1,657	1,829	74	275	1,796	953	468	234	6,047	4,974	9,281	633	3,554	17,367	243	1,029	21,873	3,026	83,396
	.30	8.47	1.89	2.19	.09	2.16	.80	1.14	.86	.28	7.28	9.97	11.14	.76	4.37	30.89	.39	1.33	36.36	3.63	100
3	21	3,080	427	303	20	46	59	126	97	6	1,647	1,229	6,478	367	708	6,387	65	52	8,801	1,032	30,967
	.07	8.89	1.26	.80	.06	.19	.08	.41	.31	.02	5.22	3.27	20.82	1.16	2.89	20.42	.11	.17	24.42	3.23	100
4	115	1,498	210	6	20	245	3	175	59	-	1,714	342	82	345	239	2,882	43	63	6,388	577	15,020
	.77	9.97	1.40	.04	.13	1.65	.02	1.17	.39	-	11.41	2.28	.84	2.30	1.99	17.86	.39	.42	42.53	5.84	100
5	343	3,768	2,046	58	21	193	10	626	411	54	3,676	1,677	335	331	1,407	6,629	144	169	14,649	1,442	38,115
	.80	9.89	5.37	.13	.06	.31	.03	1.06	.33	.14	9.64	4.40	.88	.87	3.69	17.39	.35	.44	33.43	3.78	100
6	1,030	51,175	13,038	1,352	636	833	304	1,346	1,319	2,884	23,887	2,339	4,441	3,282	17,159	59,045	1,070	1,645	115,452	12,865	317,989
	.32	16.09	4.10	.42	.20	.36	.10	.42	.41	.81	7.81	.74	1.40	1.08	9.40	14.37	.34	.81	36.31	4.04	100
7	207	4,102	1,096	8	13	69	31	248	208	143	4,877	323	252	699	1,314	8,241	22	274	17,245	1,463	40,837
	.31	10.04	2.48	.02	.05	.17	.08	.61	.35	.01	11.36	.79	.62	1.71	3.22	26.18	.09	.67	42.33	3.58	100
8	992	8,521	3,165	1,654	45	166	23	126	382	32	8,223	356	500	1,091	7,960	10,286	160	252	27,612	4,460	76,533
	1.30	11.13	4.16	2.16	.06	.32	.03	.36	.30	.04	10.74	.67	.89	1.43	10.40	13.44	.31	.33	31.09	5.83	100
9	23	2,800	289	63	40	12	25	427	75	7	843	54	198	104	973	5,992	39	176	7,268	844	20,274
	.11	13.81	1.49	.31	.20	.06	.12	2.11	.37	.03	4.16	.27	.96	.91	4.60	28.58	.19	.87	37.85	4.16	100
10	364	5,170	1,255	10	82	78	10	9,308	448	91	9,100	1,136	95	386	1,288	10,944	118	10,356	17,568	2,166	70,177
	.32	7.37	1.79	.01	.12	.11	.01	13.25	.64	.13	12.97	1.62	.13	.85	1.81	15.39	.17	14.76	31.09	3.09	100
11	994	47,760	14,218	4,442	630	515	561	19,471	2,768	2,541	42,625	641	2,733	4,735	14,433	96,001	944	12,897	125,344	16,272	410,679
	.34	11.43	3.46	1.40	.18	.13	.14	4.74	.87	.82	10.38	.16	.67	1.19	3.31	31.39	.33	3.14	30.82	3.96	100
12	92	2,885	731	3	45	21	84	6,050	165	14	1,122	31	185	563	368	22,208	29	3,276	8,486	940	47,310
	.19	6.10	1.95	.01	.09	.04	.08	12.79	.35	.03	3.37	.06	.39	1.19	.79	44.44	.06	6.82	17.94	1.99	100
13	102	4,435	520	669	33	22	14	3,579	409	6	4,964	217	117	972	673	11,615	19	2,981	12,482	1,515	45,431
	.32	9.79	1.35	1.47	.07	.03	.19	7.88	.80	.01	10.89	.68	.26	2.14	1.48	33.57	.04	6.56	27.40	3.33	100
14	45	2,146	371	318	38	26	2	735	271	18	1,854	114	112	277	461	4,786	14	444	6,645	595	19,282
	.33	11.13	1.95	1.05	.20	.13	.01	3.81	1.41	.09	9.62	.39	.36	1.44	2.39	24.82	.07	2.30	34.46	3.09	100
15	467	8,498	1,486	114	45	142	30	2,372	597	16	5,876	2,577	202	692	2,202	28,798	258	1,526	18,757	2,152	76,884
	.81	11.05	1.88	.18	.08	.19	.04	3.09	.78	.02	7.44	3.35	.26	.90	2.84	37.46	.34	1.80	24.40	2.80	100
Total	5,187	156,630	42,430	11,152	1,783	2,688	2,525	6,161	7,523	6,045	122,520	16,269	25,537	15,112	55,337	296,741	3,319	35,280	418,927	51,445	1,331,944
	.39	11.79	3.19	.84	.13	.20	.19	4.44	.96	.43	9.20	1.22	1.82	1.19	4.10	32.49	.35	3.63	31.65	3.65	100

Table 95

LABOUR FORCE 15 YEARS OF AGE AND OVER - BY OCCUPATION GROUP, BY CENSUS DIVISION,  
ALBERTA, 1961

	All Occupations	Managerial	Professional & Technical	Clerical	Sales	Service and Recreational Occupations	Transportation and Communication	Farmers and Farm Workers	Loggers, Fish- ermen, Trappers and Hunters	Miners, Quarry- men & Related Workers	Craftsmen, Production, Process & Related Workers	Labourers	Occupation Not Stated
*Alberta 1951	353,898	26,348	23,385	29,299	22,589	35,128	26,251	115,096	----- (9,776)	-----	46,383	16,783	2,862
Alberta 1961	489,511	41,691	46,579	55,317	31,629	59,055	28,261	104,162	3,009	5,291	83,449	19,615	11,453
Census Division													
1	13,540	1,100	1,247	1,119	829	1,407	902	3,066	6	43	2,914	583	324
2	30,065	2,494	2,690	2,425	2,070	2,882	1,607	9,183	13	157	4,685	1,229	630
3	9,806	702	757	424	417	928	454	3,823	19	144	1,434	389	315
4	5,275	326	313	193	189	373	266	2,791	-	46	556	106	116
5	13,054	879	857	539	498	943	512	6,324	1	375	1,588	255	283
6	122,507	12,865	13,982	20,499	10,262	17,064	7,772	7,580	79	717	23,497	5,180	3,010
7	14,097	954	886	613	563	1,282	606	6,849	2	197	1,551	310	284
8	26,125	1,999	2,155	1,555	1,397	3,444	1,289	8,598	73	490	3,653	948	524
9	8,291	688	618	669	339	1,538	685	416	307	588	1,600	668	175
10	25,904	1,610	1,627	995	994	1,705	945	14,271	14	127	2,567	606	443
11	156,267	14,237	17,621	23,873	11,984	21,371	10,446	12,314	129	1,630	31,903	6,979	3,780
12	15,728	728	955	489	374	2,742	535	7,256	356	18	1,375	446	454
13	17,086	886	788	445	452	806	595	10,436	129	179	1,586	503	281
14	6,716	549	447	379	237	667	480	980	679	225	1,411	487	175
15	25,050	1,674	1,636	1,100	1,024	1,903	1,167	10,275	1,202	355	3,129	926	659

(\*) The Alberta 1951 and 1961 occupational group totals are not strictly comparable because of slight changes in definitions; however, they are adequately comparable to serve to indicate trends.

15 YEARS OF AGE AND OVER BY INDUSTRY - ALBERTA 1951 and 1961; AND FOR MAJOR CITIES 1961

	Alberta		Calgary	Edmonton	Lethbridge	Medicine Hat	Red Deer	Others
	1951	1961	1961	1961	1961	1961	1961	1961
Agriculture	114,918	103,573	998	1,346	459	389	66	100,315
Forestry	1,709	2,784	76	129	4	1	7	2,567
Fishing and Trapping	974	839	12	23	1	1	-	802
Mines, Quarries and Oil Wells	15,723	17,350	6,942	2,839	90	54	248	7,177
Manufacturing	29,015	42,217	13,064	17,477	1,541	1,652	514	7,969
Construction	23,641	37,360	10,613	12,442	1,060	710	703	11,832
Transportation	29,956	42,809	10,734	13,392	1,418	961	577	15,727
Public Utilities	2,396	4,626	1,468	1,257	155	83	48	1,615
Trade	51,943	80,096	23,846	27,710	3,414	1,574	1,504	22,048
Finance, Insurance and Real Estate	7,957	14,695	5,566	5,467	551	269	282	2,560
(Non-Government Services)								
Community, Business, Personal Service	50,810	93,424	23,454	31,067	3,429	2,020	2,239	31,215
(Government Services)								
Public Administration	22,118	38,627	9,786	15,211	1,036	620	753	11,221
Industry - Unspecified or Undefined	2,337	11,111	2,697	3,216	296	214	183	4,505
TOTAL	353,497	489,511	109,256	131,576	13,454	8,548	7,124	219,553

Table 97 WAGE-EARNERS, 15 YEARS OF AGE AND OVER SHOWING TOTAL WAGE-EARNERS AND THE NUMBER OF WAGE-EARNERS BY AMOUNT OF EARNINGS, ALBERTA AND CENSUS DIVISIONS, 1961

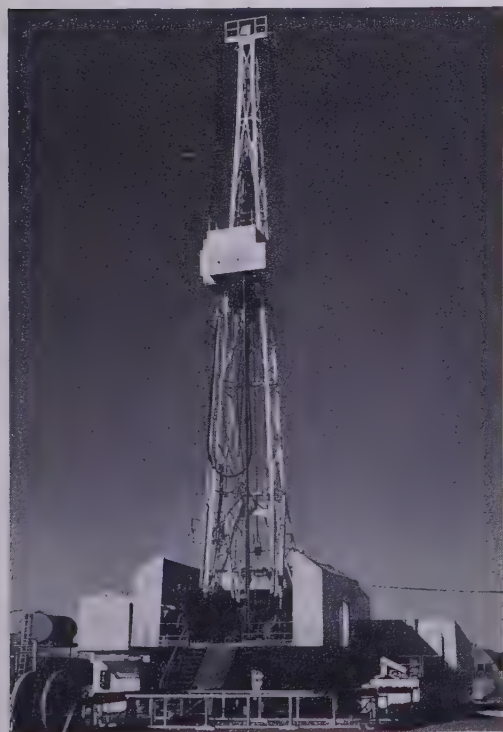
	Number of Wage-Earners Working for Wages or Salary, and Reporting Earnings by Income Groups						
	Total Wage-Earners*	-\$1,000	\$1,000-\$1,999	\$2,000-\$2,999	\$3,000-\$3,999	\$4,000-\$5,999	\$6,000+
	No.	No.	No.	No.	No.	No.	No.
Alberta	362,794	52,379	47,737	59,952	70,609	78,116	34,017
Census Division							
1	10,049	1,426	1,502	1,670	2,322	1,896	593
2	21,691	3,919	3,576	4,059	3,800	3,669	1,205
3	6,319	1,177	1,060	1,003	973	924	340
4	2,640	552	513	396	427	394	111
5	7,212	1,443	1,465	1,191	1,208	903	263
6	106,959	12,617	11,775	17,033	21,703	26,049	12,765
7	6,947	1,329	1,322	1,095	1,237	1,148	335
8	16,155	2,620	2,344	3,069	3,203	3,054	1,088
9	7,367	1,241	1,020	1,137	1,586	1,563	520
10	10,653	2,084	1,944	1,823	1,897	1,560	478
11	134,299	17,516	15,849	22,162	26,827	31,156	14,490
12	8,013	1,543	1,138	1,320	1,296	1,633	414
13	6,003	1,410	1,136	965	899	883	277
14	5,147	747	743	781	955	1,199	499
15	13,340	2,755	2,350	2,248	2,276	2,085	639

\* Total wage-earners includes persons working for wages or salary and/or persons paid income in kind. These figures do not include own-account earners, e.g. farmers, professional people, and owners of business enterprises. The figures do include those who worked only part-time or for short periods.





*Track laying operations on the Alberta Resources Railway.*



*The importance of the petroleum industry in Alberta has led to the establishment of the only oilwell drilling school in Canada.*



*Powerful tugs are used in freighting on the Athabasca River in northern Alberta.*

# INDUSTRIAL ASSISTANCE

Various branches of the provincial and federal governments, planning commissions, chartered banks, railways, and utility companies are equipped to gather, analyze, compile, and publish information for the purpose of furthering the industrial development of the province.

## PROVINCIAL GOVERNMENT SERVICES

### Industrial Development Branch:

The prime function of this Branch is to attract new industries to Alberta, and to assist and encourage expansion of established industries. Information is provided on markets, availability of raw materials, plant sites, water, labour and other industrial location factors. The Branch arranges for displays at trade fairs and exhibitions to encourage the sale and export of Alberta-made products.

Branch offices are maintained in Calgary, Montreal, and Los Angeles. The Branch also works in close co-operation with Alberta House in London, England to promote industry.

Special brochures on cities, towns and villages are prepared for publication.

Industrial Development Office,  
Department of Industry and Development,  
1820 Centennial Building,  
Edmonton, Alberta.

Business Development Officer,  
Government of the Province of Alberta,  
No. 1 Place Ville Marie,  
Montreal 2, Quebec.

Industrial Development Officer,  
Industrial Development Branch,  
Department of Industry and Development,  
514 - 11th Avenue S. W.,  
Calgary, Alberta.

Business Development Officer,  
Government of the Province of Alberta,  
550 South Grand Avenue,  
Los Angeles, California.

90017

Agent General,  
Alberta House,  
37 Hill Street,  
London W 1, England.

### Alberta Bureau of Statistics:

The Bureau gathers, analyzes and publishes statistics pertinent to the economic development of Alberta. Current and long term trends and indicators are documented and analyzed.



Special market surveys may be conducted at the request of businessmen, or initiated by the Bureau, when it is believed that the existing market is of the size sufficient to justify the establishment of a new industrial plant.

The Alberta Bureau of Statistics,  
Department of Industry and Development,  
1529 Centennial Building,  
Edmonton, Alberta.

#### Alberta Securities Commission:

The Commission regulates and controls the issuance of stocks, bonds and debentures for sale to the public, and investigates all fraudulent acts committed in connection with the sales of securities. All persons engaged in the securities business must be registered and a prospectus for securities must be filed.

Alberta Securities Commission,  
Department of the Attorney General,  
403 Empire Building,  
Edmonton, Alberta.

#### Farm Economics Branch:

This Branch of the Department of Agriculture carries out an extensive education and information program on the principles of farm management. Agricultural statistics for the province are compiled by the Branch. Surveys are conducted on the costs and returns of producing various agricultural commodities. For ARDA use, a number of studies are prepared on the socio-economic status of certain regions in the province.

Farm Economics Branch,  
Department of Agriculture,  
10405 - 100th Avenue,  
Edmonton, Alberta.

#### The Alberta Commercial Corporation:

This Crown corporation offers financial assistance to Alberta manufacturing industries. Three types of financing are available. The first is the purchase of raw materials by the Corporation for sale and delivery to a client company as required. Through this method Alberta firms are able to obtain materials when prices are most attractive, without tying up working capital in inventories.

Secondly, in cases where no suitable arrangements can be made with other institutions, the Corporation also is able to finance purchases of production equipment. Thirdly, the Corporation is able to finance the purchase of land and buildings.

The Alberta Commercial Corporation,  
1810 Centennial Building,  
Edmonton, Alberta.



The Alberta Commercial Corporation,  
514A - 5 Avenue S. W.,  
Calgary, Alberta.

The Alberta Freight Bureau:

This Bureau gathers and supplies information on freight rates and charges for goods transported by all types of carriers in Canada and the United States. The Director of the Bureau works in Ottawa to negotiate rates with the management groups of the transportation companies. He endeavours to secure and maintain rates and charges that are advantageous to Alberta producers in the transporting of goods into and out of the Province.

Alberta Freight Bureau,  
1812 Centennial Building,  
Edmonton, Alberta.

Alberta Research Council,  
Industrial and Engineering Services Division:

This Division of the Alberta Research Council maintains a technical information service to assist industries with technical problems, and an industrial engineering service to help solve production problems. Some research and testing projects may be undertaken for industry on a contract basis.

Industrial and Engineering Services Division,  
Alberta Research Council,  
87th Avenue and 114th Street,  
Edmonton, Alberta.

"Buy Alberta" Programme:

Various branches of the Department of Industry and Development are responsible for the "Buy Alberta" program, which is designed to promote the growth of Alberta industries by advertising and identifying the products of local manufacturers.

Northern Alberta Development Council:

The Council has the responsibility of fostering increased economic and social development in areas of the province north of the 55th parallel.

Northern Alberta Development Council,  
1724 Centennial Building,  
Edmonton, Alberta.

Northern Alberta Development Council,  
202 Provincial Building,  
Grande Prairie, Alberta.

## FEDERAL GOVERNMENT SERVICES

Canada Department of Trade and Commerce, Regional Office:

The Regional Officer of the Canada Department of Trade and Commerce offers advice and direct assistance to producers, manufacturers, consultants and any other firms or individuals interested or engaged in exporting out of Canada any goods or services from Alberta or the Northwest Territories. Assistance is given to the exporter in determining his export price, foreign duty payable, foreign regulations and documentation required, export credit insurance, sources of transportation and other details required to develop an export market. The Department publishes a number of booklets to aid the new exporter. Encouragement and direct assistance is given the local exporter to participate in a wide variety of Foreign Trade Fairs.

Regional Office,  
Canada Department of Trade and Commerce,  
802 Chancery Hall,  
Edmonton, Alberta.

Rural Development Research Branch:

This Branch was established to do comprehensive socio-economic studies on specific areas in Alberta for the jointly sponsored federal-provincial program set up by the Agricultural Rehabilitation Development Act (ARDA). The studies deal with inventory of all known resources in an area and their potential use, economic base studies to determine the structure of the local economy, labour force projections, summaries of the population characteristics and health, education and welfare fields, and other topics. All studies are in published form.

Rural Research Development,  
Agricultural Economics Division,  
Department of Agriculture,  
10405 - 100th Avenue,  
Edmonton, Alberta.

## INDUSTRIAL DEVELOPMENT BOARDS: MUNICIPALITIES

City of Calgary

Co-ordinator of Industrial Development,  
City Hall,  
Calgary, Alberta.

City of Edmonton

Industrial Co-ordinator,  
City Hall,  
Edmonton, Alberta.

City of Lethbridge

Industrial Co-ordinator,  
City Hall,  
Lethbridge, Alberta.

City of Medicine Hat

Industrial Co-ordinator,  
City Hall,  
Medicine Hat, Alberta.

City of Red Deer

Industrial Director,  
City Hall,  
Red Deer, Alberta.

City of Drumheller

Industrial Co-ordinator,  
City Hall,  
Drumheller, Alberta.

City of Wetaskiwin

Industrial Representative,  
City Hall,  
Wetaskiwin, Alberta.

County of Red Deer Number 23

Industrial Representative,  
County of Red Deer No. 23,  
Lousana, Alberta.

Town of Barrhead

Chairman,  
Industrial Development Committee,  
Barrhead, Alberta.

Town of Edson

Industrial Representative,  
Town Hall,  
Edson, Alberta.

Town of Ponoka

Industrial Representative,  
Town Hall,  
Ponoka, Alberta.

Town of Stettler

Industrial Representative,  
Town Hall,  
Stettler, Alberta.

City of Camrose

Industrial Representative  
City Hall,  
Camrose, Alberta.

City of Grande Prairie

Industrial Development Co-ordinator,  
City Hall,  
Grande Prairie, Alberta.

City of Lloydminster

Industrial Representative,  
City Hall,  
Lloydminster, Alberta.

Town of Athabasca

Industrial Representative,  
Town Hall,  
Athabasca, Alberta.

Town of Brooks

Industrial Representative,  
Town Hall,  
Brooks, Alberta.

Town of Peace River

Industrial Representative,  
Town Hall,  
Peace River, Alberta.

Town of St. Paul

Industrial Representative,  
Town Hall,  
St. Paul, Alberta.

Town of Taber

Industrial Development Co-ordinator,  
Town of Taber,  
Taber, Alberta.



## REGIONAL PLANNING COMMISSIONS

Battle River Regional Planning Commission,  
4810 - 49th Avenue,  
Wetaskiwin, Alberta.

Edmonton Regional Planning Commission,  
10523 - 100th Avenue,  
Edmonton, Alberta.

Peace River District Planning Commission,  
City Hall,  
Grande Prairie, Alberta.

Calgary District Planning Commission,  
343 - 11th Avenue S. W.,  
Calgary, Alberta.

Oldman Regional Planning Commission,  
909 - 4th Avenue S. W.,  
Lethbridge, Alberta.

Red Deer Regional Planning Commission,  
4918 - 53rd Street,  
Red Deer, Alberta.

Medicine Hat Regional Planning Commission,  
643 - 2nd Street S. E.,  
Medicine Hat, Alberta.

## BANKS

Canadian Imperial Bank of Commerce

Business Development Department,  
Regional Office,  
Canadian Imperial Bank of Commerce,  
309 - 8th Avenue S. W.,  
Calgary, Alberta.

Manager,  
Business Development Department,  
Canadian Imperial Bank of Commerce,  
402 Jasper Avenue and 100th Street,  
Edmonton, Alberta.

Bank of Montreal

The Manager,  
Business Development and Public  
Relations Office,  
Main Branch,  
Bank of Montreal,  
10089 - Jasper Avenue,  
Edmonton, Alberta.

Office of Vice-President for Alberta,  
Bank of Montreal,  
140 - 8th Avenue S. W.,  
Calgary, Alberta.

Bank of Nova Scotia

Assistant General Manager,  
Alberta Regional Office,  
Bank of Nova Scotia,  
526 Lougheed Building,  
1st Street and 6th Avenue S. W.,  
Calgary, Alberta.

The Manager,  
Main Branch,  
Bank of Nova Scotia,  
10050 - Jasper Avenue,  
Edmonton, Alberta.

Royal Bank of Canada

Manager,  
Business Development Department,  
Royal Bank of Canada,  
409 - 8th Avenue W.,  
Calgary, Alberta.

Manager,  
Royal Bank of Canada,  
10107 - Jasper Avenue,  
Edmonton, Alberta.

Toronto-Dominion Bank

Special Representative,  
Business Development,  
Alberta Division Office,  
Toronto-Dominion Bank,  
Jasper Avenue and 100th Street,  
Edmonton, Alberta.

Oil and Gas Department,  
Toronto-Dominion Bank,  
505 - 8th Avenue W.,  
Calgary, Alberta.

Treasury Branch - Government of Alberta

The Manager,  
Main Branch,  
Treasury Branch,  
717 - 6th Avenue S. W.,  
Calgary, Alberta.

The Manager,  
Main Branch,  
Treasury Branch,  
9954 - Jasper Avenue,  
Edmonton, Alberta.

The Mercantile Bank of Canada

The Manager,  
The Mercantile Bank of Canada,  
700 - 8th Avenue S. W.,  
Calgary, Alberta.

RAILWAYS

The Canadian National Railway Company

Manager,  
Industrial Development,  
Research and Development Department,  
The Canadian National Railway Company,  
C N Tower,  
Edmonton, Alberta.

Industrial Development Offices,  
The Canadian National Railway Company,  
C N R Station,  
Calgary, Alberta.

The Canadian Pacific Railway Company

Superintendent,  
Industrial and Agricultural Development,  
Operating Department,  
The Canadian Pacific Railway Company,  
C P R Station,  
Edmonton, Alberta.

Superintendent,  
Industrial and Agricultural Development,  
The Canadian Pacific Railway Company,  
Room 44, Palliser Hotel,  
Calgary, Alberta.

## UTILITY COMPANIES

Calgary Power Limited

Commercial Superintendent,  
Calgary Power Limited,  
140 - 1st Avenue S. W.,  
Calgary, Alberta.

Commercial Manager,  
Calgary Power Limited,  
10121 - 151st Street,  
Edmonton, Alberta.

Canadian Western Natural Gas Company Limited

Customer Sales and Service Department,  
Canadian Western Natural Gas Company Limited,  
140 - 6th Avenue S. W.,  
Calgary, Alberta.

Canadian Utilities Limited

Manager of Economics,  
Canadian Utilities Limited,  
10040 - 104th Street,  
Edmonton, Alberta.

Northland Utilities Limited

Information Services,  
Northland Utilities Limited,  
10040 - 104th Street,  
Edmonton, Alberta.

Northwestern Utilities Limited

Budget and Special Studies Department,  
Northwestern Utilities Limited,  
10040 - 104th Street,  
Edmonton, Alberta.

## CIVIC UTILITY DISTRIBUTION SYSTEMS

City of Calgary

Electrical Distribution Department:  
Supervisor, Commercial Services,  
Electric Light Department,  
Administration Building,  
Manchester Area,  
Calgary, Alberta.

Waterworks Distribution Department:  
Assistant Deputy City Engineer,  
Engineering Department,  
City of Calgary,  
Calgary, Alberta.

City of Edmonton

Electrical Distribution Department:  
Commercial Supervisor,  
Commercial Section,  
Edmonton Electrical Distribution System,  
City Hall,  
Edmonton, Alberta.

Waterworks Distribution Department:  
Administrative Assistant to the Supt.  
Waterworks Distribution System,  
City Hall,  
Edmonton, Alberta.

Telephone System:  
Commercial Manager,  
Special Accounts Section,  
Edmonton Telephone System,  
807 C N Tower,  
Edmonton, Alberta.



City of Lethbridge

Electrical Distribution Department:  
 Utilities Director,  
 Lethbridge Electrical Distribution System,  
 City Hall,  
 Lethbridge, Alberta.

Waterworks Distribution Department:  
 Engineering Director,  
 Lethbridge Water Distribution System,  
 City Hall,  
 Lethbridge, Alberta.

City of Medicine Hat

Electrical Distribution Department:  
 Director of Utilities,  
 Utilities Building,  
 830A - 2nd Street S. E.,  
 Medicine Hat, Alberta.

Waterworks Distribution Department:  
 Public Works Director,  
 Municipal Services Building,  
 188 - Kipling Street,  
 Medicine Hat, Alberta.

City of Red Deer

Electrical Distribution Department:  
 Electric Light and Power Superintendent,  
 City Hall,  
 Red Deer, Alberta.

Waterworks Distribution Department:  
 City Engineer,  
 City Hall,  
 Red Deer, Alberta.

## OTHER INDUSTRIAL INFORMATION SOURCES

Edmonton Area Industrial Development Association

Managing Director,  
 Edmonton Area Industrial Development Association,  
 10410 - 81 Avenue,  
 Edmonton, Alberta.

The purpose of the Association is to provide information and practical assistance to those interested in establishing a new business in the Edmonton area.

Southern Alberta Economic Development Council

Director,  
 Southern Alberta Economic Development Council,  
 909 - 4 Avenue S.,  
 Lethbridge, Alberta.

Industrial Development Bank

The Manager,  
 Industrial Development Bank,  
 3rd Floor,  
 Hudson's Bay Oil and Gas Building,  
 Calgary, Alberta.

The Manager,  
 Industrial Development Bank,  
 601 Chancery Hall,  
 Edmonton, Alberta.

# Industrial Location Factors

	CALGARY	EDMONTON	LETHBRIDGE	MEDICINE HAT	RED DEER	LLOYDMINSTER	
I	LOCATION OF PRODUCTION MATERIALS						
(1)	Minerals and their by-products:						
(a)	Metallic:	Iron Ore (near Burmis, 150 miles s. w.)	Base metals & uranium from N. W. T. shipped through city. Nickel is refined at Ft. Saskatchewan from ore concentrates transported from Manitoba. Metals in nickel refinery slag.	Iron ore (near Burmis, approximately 75 miles west)			
(b)	Non-metallic:	Coal, petroleum, natural gas, sulphur, limestone, barytes, sand	Coal, petroleum, natural gas, sulphur, limestone, sand, gravel, clay, shale, marl, bentonite.	Coal, petroleum, natural gas, sulphur, limestone, barytes,sand, gravel, bentonite, mica schist, talc, volcanic ash, pyrophyllite.	Coal, natural gas, sand, gravel, rough pottery clay, ball mill pebbles.	Coal, petroleum, natural gas, sulphur, limestone, sand, gravel, clay.	
(2)	Non-minerals and by-products:						
(a)	Foods:	Meat, dairy products, poultry products, coarse grains, wheat.	Meats, dairy products, poultry products, wheat, coarse grains, fish, vegetables, honey.	Meats, dairy products, poultry products, wheat, coarse grains, irrigated vegetable crops, honey, sugar beets, oil-bearing seed crops.	Meats, wheat, flax, vegetables.	Meats, dairy products, poultry products, wheat, coarse grains, malting barley, rye, honey.	
(b)	Forest products:	Finished lumber, poles and ties.	Finished lumber, plywood, wood pulp, poles and ties.	Finished lumber, plywood.		Finished lumber, pit props, railroad ties.	
(c)	Fibres, furs, hides:	Hides, brush bristles, straw.	Hides, furs, synthetic yarns, glass fibre, straw.	Hides, wool, straw.	Hides, wool, straw.	Hides, straw.	
(3)	Partly processed or manufactured products:	Gross Value Manufacturing - 1965 \$ 370,000,000 Foods and Beverages Rubber Products Leather Products Textile Products (except clothing) Clothing (textile and fur) Wood Products Furniture & Fixture Industries Paper Products Printing, Publishing & Allied Prod. Iron & Steel Products Farm Machinery Machinery Industry Non-Ferrous Metal Products Transportation Equipment Electrical Apparatus Non-metallic Mineral Products Products of Petroleum & Coal Chemical Products	Gross Value Manufacturing - 1965 \$ 536,000,000 Foods and Beverages Rubber Products Leather Products Textile Products (except clothing) Knitting Mills Clothing (textile and fur) Wood Products Furniture & Fixtures Paper Products Printing, Publishing & Allied Prod. Primary Metals Iron & Steel Products Farm Machinery Machinery Industry Transportation Equipment Non-Ferrous Metal Products Electrical Apparatus Non-metallic Mineral Products Products of Petroleum & Coal Chemical and Chemical Products	Gross Value Manufacturing - 1965 \$ 80,000,000 Foods and Beverages Textile Products (except clothing) Clothing (textile and fur) Wood Products Printing, Publishing & Allied Prod. Iron and Steel Products Agricultural Implements Transportation Equipment Communication Equipment Non-metallic Mineral Products Clay Products Products of Coal Plastic Products Chemical Products Brooms	Gross Value Manufacturing - 1965 \$ 40,000,000 Foods and Beverages Rubber Products Wood Products Printing, Publishing & Allied Prod. Iron and Steel Products Transportation Equipment Non-metallic Mineral Products Clay Products Chemical Products	Gross Value Manufacturing - 1965 \$ 25,000,000 Foods and Beverages Textile Products (except clothing) Wood Products Printing, Publishing & Allied Prod. Iron and Steel Products Transportation Equipment Electrical Apparatus Non-metallic Mineral Products Agricultural Implements Non-ferrous Metal Products Diamond-Bit Drills	Gross Value Manufacturing - 1965 \$ 7,000,000 Foods and Beverages Paper Products Iron and Steel Products Products of Petroleum and Coal Chemical Products
II	POPULATION OF CITIES: 1966	Population: 330,575 Population within 50 mile radius, 1966 Census: 375,000	Population: 376,925 Population within 50 mile radius 1966 Census: 495,000	Population: 37,186 Population within a 50 mile radius, 1966 Census: 100,000	Population: 25,574 Population within a 50 mile radius, 1966 Census: 39,000	Population 26,171 Population within a 50 mile radius, 1966 Census 112,000	Population: 7,071 Population within a 50 mile radius 1966 Census 40,000
III	SITES:						
(1)	Area & cost of land available for industrial expansion as of 1967:	HIGHFIELD INDUSTRIAL PARK: 55 acres remaining. Utilities, trackage. Zoned light industrial. Surrounding area subject to zoning and performance standards.	BONAVENTURE: 120 acres, utilities, trackage, presently zoned industrial reserve, \$6,500 - \$7,500 per acre.	460 acres @\$2,600 - \$3,400 per acre. Trackage and utilities. Zoned for light and heavy industry.	LIGHT INDUSTRIAL AREA: 65 acres at \$50.00 per effective frontage foot.	C. P. R. INDUSTRIAL AREA: On trackage - \$40.33 per front ft. Off trackage - \$35.68 per front ft.	City owned sites available on trackage. Price to be negotiated. Privately owned industrial sites available west of city.

Industrial Location Factors

ED DEER

LLOYDMINSTER

CAMROSE

DRUMHELLER

GRANDE PRAIRIE

WETASKIWIN

um, natural gas, sul-  
ne, sand, gravel,

Coal, petroleum, natural gas, gravel.

Coal, petroleum, natural gas, sand,  
gravel, bentonite.

Coal, petroleum, natural gas, sand,  
gravel, clay, shale, bentonite.

Coal, petroleum, natural gas, lime-  
stone, sand, gravel.

Coal, petroleum, natural gas, sand,  
gravel.

products, poultry pro-  
coarse grains, malting  
oney.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, honey.

Meat, dairy products, poultry pro-  
ducts, wheat, coarse grains.

Meats, dairy products, poultry pro-  
ducts, wheat, coarse grains, veg-  
etables.

Meat, dairy products, poultry pro-  
ducts, coarse grains, wheat.

Meats, dairy products, poultry pro-  
ducts, coarse grains, wheat.

ber, pit props, rail-

Hides, wool, straw.

Hides, straw.

Hides, wool, straw.

Logs, ties, lumber products, ply-  
wood.

Finished lumber, poles.

Hides, wool, straw. /

Hides, mink fur, bristles, straw.

Manufacturing - 1965  
verages  
cts (except clothing)  
s  
lishing & Allied Prod.  
Products  
n Equipment  
paratus  
Mineral Products  
mplements  
Metal Products  
Drills

Gross Value Manufacturing - 1965  
\$ 7,000,000  
Foods and Beverages  
Paper Products  
Iron and Steel Products  
Products of Petroleum and Coal  
Chemical Products

Gross Value Manufacturing - 1965  
\$ 16,000,000  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Prod.  
Iron and Steel Products  
Non-metallic Mineral Products

Gross Value Manufacturing - 1965  
\$ 1,000,000  
Foods and Beverages  
Wood Products  
Iron and Steel Products

Gross Value Manufacturing - 1965  
\$ 6,000,000  
Foods and Beverages  
Wood Products  
Printing, Publishing & Allied Prod.  
Iron and Steel Products  
Metal Fabricating  
Non-metallic Mineral Products

Gross Value Manufacturing - 1965  
\$ 5,000,000  
Foods and Beverages  
Printing, Publishing & Allied Prod.  
Iron and Steel Products  
Farm Machinery  
Transportation Equipment

26,171  
within a 50 mile radius,  
112,000

Population: 7,071  
Population within a 50 mile radius,  
1966 Census: 40,000

Population: 8,362  
Population within a 50 mile radius,  
1966 Census: 104,000 (excluding  
Edmonton)

Population: 3,574  
Population within a 50 mile radius,  
1966 Census: 38,000

Population: 11,417  
Population within a 50 mile radius,  
1966 Census: 32,000

Population: 6,008  
Population within a 50 mile radius,  
1966 Census: 100,000 (excluding  
Edmonton)

USTRIAL AREA:  
- \$40.33 per front ft.  
- \$35.68 per front ft.

City owned sites available on track-  
age. Price to be negotiated.  
Privately owned industrial sites  
available west of city.

MOHLER INDUSTRIAL AREA:  
18 acres remaining @ \$3,750 - \$6,000  
per acre. Some highway frontage lots  
@ \$80 - \$115 per frontage foot

50 acres @ \$100 - \$500 per acre.  
Utilities, trackage.

RICHMOND INDUSTRIAL PARK:  
200 acres @ \$1,100 - \$3,000 per acre  
for the land. Natural gas & electrical  
utilities. Trackage, zoned commer-  
cial and light industry. Highway com-  
mercial area. City owned.

CITY OF WETASKIWIN  
INDUSTRIAL PARK:  
16 acres remaining @ \$2,000 per  
acre. All utilities available.  
Paved. Zoned industrial.





### III SITES (Continued)

#### CALGARY

FOOTHILLS INDUSTRIAL PARK:  
540 acres @ \$6,500 - \$6,750 per  
acre. Utilities, C.P. and C.N.  
trackage. Zoned into heavy and  
light industrial areas.  
MERIDIAN INDUSTRIAL ESTATES:  
45 acres remaining. Utilities.  
Zoned light industrial. Private  
development.  
AIRPORT SUBDIVISION:  
28 acres remaining for general  
commercial and light industrial  
use - priced \$8,000 - \$14,000  
per acre as a fully serviced pack-  
age. Building standards.  
MAYLAND INDUSTRIAL PARK:  
130 acres remaining. Light ind-  
ustrial. Special development.  
Fully serviced, including track-  
age. Private development.  
FAIRVIEW INDUSTRIAL PARK:  
21 acres remaining @ about  
\$10,000 per acre. Serviced.  
Zoned light industrial. Private  
development.  
HAYSBORO INDUSTRIAL PARK:  
50 acres remaining @ \$9,000 -  
\$10,000 per acre. Trackage,  
zoned light industrial. Private  
development.  
GREENVIEW INDUSTRIAL  
DISTRICT:  
A few small sites remaining.  
Zoned light industrial. Private  
development.  
C.P.R. OGDEN SHOPS AREA:  
122 acres zoned heavy industrial.  
Railway leases serviced sites with  
trackage.

#### EDMONTON

BROWN ESTATE:  
20 acres, utilities, trackage, zoned  
medium industrial, \$6,500 - \$7,500  
per acre.  
DOMINION:  
20 acres, utilities, trackage, zoned  
medium industrial, \$6,500 - \$7,500  
per acre.  
HUFF BREMNER ESTATE:  
20 acres, utilities, trackage, zoned  
medium industrial, \$7,000 - \$10,000  
per acre.  
BREMNER ESTATE:  
90 acres, trackage, zoned medium &  
heavy industrial \$15,000 - \$20,000  
per acre.  
HIGH PARK:  
30 acres, utilities, zoned medium  
industrial \$7,000 - \$10,000 per acre.  
HARWIN PARK ESTATE:  
80 acres, presently zoned industrial  
reserve, \$2,000 - \$2,500 per acre.  
ALBERTA PARK:  
250 acres, trackage, zoned heavy  
& reserved industrial, \$2,000 -  
\$3,000 per acre.  
SHEFFIELD:  
30 acres, utilities, trackage, zoned  
medium industrial, \$6,000 - \$8,000  
per acre.  
WEST SHEFFIELD:  
120 acres, utilities, trackage, zoned  
medium industrial \$6,000 - \$8,000  
per acre.  
YOUNGSTOWN INDUSTRIAL:  
40 acres, utilities, zoned medium  
industrial \$6,000 - \$8,000 per acre.  
INDUSTRIAL HEIGHTS:  
50 acres, utilities, trackage, zoned  
medium industrial \$6,500 - \$7,500  
per acre.  
KENNEDEALE:  
200 acres, trackage, presently zoned  
industrial reserve, \$2,000 - \$3,000  
per acre.  
CORONET ADDITION:  
60 acres, utilities, trackage, zoned  
light and medium industrial, \$6,500  
- \$7,500 per acre.  
DAVIES INDUSTRIAL:  
450 acres, utilities, trackage, pre-  
sently zoned industrial reserve,  
\$6,500 - \$7,500 per acre.  
CORONET:  
140 acres, utilities, trackage, zoned  
light, medium, & heavy industrial,  
\$6,500 - \$7,500 per acre.  
SPEEDWAY:  
30 acres, utilities, trackage, zoned  
medium & heavy industrial, \$3,000  
- \$4,000 per acre.  
PAPACHASE:  
150 acres, utilities, trackage, pre-  
sently zoned industrial reserve,  
\$3,000 - \$4,000 per acre.  
STRATHCONA INDUSTRIAL PARK:  
380 acres, utilities, trackage, pre-  
sently zoned industrial reserve,  
\$12,000 - \$16,000 per acre.

#### LETHBRIDGE

#### MEDICINE HAT

BRIERPARK SITE:  
240 acres @ \$2,000 per acre,  
utilities, trackage.  
PURMAL SITE:  
45 acres.  
KIPLING STREET SITE:  
7 acres.

#### RED DEER

C. N. R. INDUSTRIAL AREA:  
Land - \$2,700 per acre  
Utilities - \$25.50 per front foot.  
GOLDENWEST INDUSTRIAL AREA:  
350 acres adjoining Hwy. 2, power,  
gas, storm drainage, and gravelled  
road.  
NORTH HILL LIGHT INDUSTRIAL:  
Utilities, paved road.  
RIVERSIDE LIGHT INDUSTRIAL  
PARK:  
100 acres @ \$2,700 per acre, fully  
serviced, trackage; \$25.50 per front  
foot for services. Purchasers may  
lease an equal portion to that bought  
with option to purchase land within  
10 years. Rental 7% per annum of  
cost price plus taxes. City owned.  
RIVERSIDE HEAVY INDUSTRIAL  
PARK:  
360 acres. Sewer, power, gas,  
gravel road, and trackage.  
Privately owned.  
SOUTH HILL LIGHT INDUSTRIAL:  
37 acres, 1/2 mile from Hwy. 2.  
Levelled and up to building grade,  
trackage, water, gas, and power.  
Privately owned.

CAMROSE

Spur trackage available on some acres. Prices include sewer, water, gas and power installation, gravel roads and lanes. Zoned highway commercial and industrial. City owned.

Other city and privately owned sites available.

GRANDE PRAIRIE

NORTHEAST INDUSTRIAL DISTRICT: 300 acres @ negotiated price depending on size and location. Utilities, trackage, zoned light and heavy industrial. City owned.

PRIVATE SITES:  
N. A. R. sites,  
Highway commercial areas.  
Sites will be available along A. R. R.

WETASKIWIN

Privately owned industrial sites available. All utilities available.





CALGARY

EDMONTON

LETHBRIDGE

MEDICINE HAT

RED DEER

III SITES: (Continued)

- (2) Soil structure and topographical features:

6" - 12" black soil  
2' - 3' heavy sub-soil with admixture of sand and gravel.  
Gravel base. Bearing qualities good. Sub-surface drainage good. Water table not adversely high.

6" - 12" black soil  
North side of North Saskatchewan River - 20' - 23' of medium firm olive clay.  
South side of North Saskatchewan River - 14' - 16' of medium firm olive clay.  
Clay underlain by dense glacial till of good bearing qualities.  
Water table not adversely high.

Brown and black soil. Gravel sub-soil. Load bearing 4,000 lbs. per sq. ft.

10" - 15" brown soil. Sub-soil clay, and in some areas gravel and sand. Lime layer 15" - 20" below surface.

12" - 14" black soil. Sub-soil composed of sand, silty clays. Red Deer River Valley - sand, clay and gravel sub-soil. Water table not adversely high. Good bearing qualities.  
North of Valley - sand, silt and clay sub-soil. Variable water table. Foundation qualities vary from fair to good.  
South of Valley - dense glacial till clay. Water table not adversely high. Good bearing qualities.

IV INDUSTRIAL FUEL:

- (1) Types of fuel available:

Natural gas, electricity, coal, propane, diesel fuel.

Natural gas, electricity, coal, propane, fuel oil.

Natural gas, electricity, coal, propane, diesel fuel.

Natural gas, electricity, coal, propane, fuel oil.

Natural gas, electricity, coal, propane, diesel fuel.

- (2) Cost of fuel to industry:

Natural Gas:  
(1) Optional Rates  
(a) General Service  
Availability:  
This rate is available to all customers using in excess of 18,650 Mcf per year.  
Net Rate: Fixed Charge - \$150 per month; plus Commodity Charge - 25¢ per Mcf; Minimum Monthly Charge - \$150.  
(b) Special Service  
Availability:  
To customers on annual contract whose annual consumption of gas is not less than 200,000 Mcf and who are located adjacent to the Company's main transmission lines serving the Calgary-Lethbridge System, and served directly therefrom.  
Net Rate: Fixed Charge - \$650 per month; plus Commodity Charge - 22¢ per Mcf; Minimum Monthly Charge - \$650.

(2) High Load Factor Rates  
(a) General Service  
Availability:  
To customers on annual contract whose annual consumption of gas is not less than 10,000 Mcf and whose total consumption during the six meter reading periods ending in May, June, July, August, September and October, is not less than 40% of their total consumption for the year.  
Net Rate: Fixed Charge - \$20 per month plus \$1.75 per month per Mcf of maximum 12-hour demand; plus Commodity Charge - First 4,000 Mcf per month 17¢ per Mcf. All additional Mcf per month 16¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

Natural Gas:  
The rate for natural gas service is dependent upon the users annual consumption and pattern use. A typical industrial rate follows:  
  
Available on annual contract to all customers who are located adjacent to and served directly from the main transmission lines serving the integrated system, or from the Edmonton high pressure loop and whose annual consumption is more than 2,750,000 Therms and whose total consumption during the six meter reading periods ending in May, June, July, August, September, and October is not less than 40% of their total consumption during the contract year.  
Fixed Charge: 8¢ per month per Therm of maximum 24-hour demand. Commodity Charge for all consumption - 1.5¢ per Therm.

(1 Therm = 100,000 British Thermal Units)

Still lower rates are available on a 5 year contract basis for large industrial users.

Detailed information on natural gas service and natural gas rates can be obtained by contacting:  
The Manager,  
Sales and Industrial Development,  
Northwestern Utilities Limited,  
10040 - 104 Street,  
Edmonton, Alberta.

Natural Gas:  
(1) Optional Rates  
(a) General Service  
This rate is available to all customers using in excess of 18,650 Mcf per year.  
Fixed Charge - \$150 per month; plus Commodity Charge - 25¢ per Mcf; Minimum Monthly Charge - \$150.  
(b) Special Service  
Available to customers located adjacent to and served directly from the Company's main transmission lines serving Calgary - Lethbridge System and whose annual consumption is more than 200,000 Mcf.  
Fixed Charge - \$650 per month; plus Commodity Charge - 22¢ per Mcf per month; Minimum Monthly Charge - \$650.

(2) High Load Factor Rates  
(a) General Service  
Available to customers whose annual consumption is more than 10,000 Mcf, and whose total consumption during the six meter reading periods ending in May, June, July, August, September and October, is not less than 40% of their total consumption for the year.  
Fixed Charge - \$20 per month plus \$1.75 per month per Mcf of maximum 12-hour demand; plus  
Commodity Charge - First 4,000 Mcf per month - 17¢ per Mcf. All additional Mcf per month - 16¢ per Mcf. Minimum Monthly Charge - Fixed Charge.

(b) Special Service  
Available to all customers located adjacent to and served directly from the Company's main transmission lines serving Calgary - Lethbridge System and whose annual consumption is more than 150,000 Mcf and whose

Natural Gas:  
BTU Rating per Mcf. - 966  
Gas Rates -  
(1) Class "C"  
Applicable to:  
Large industrial power and process, and wholesale contract customers, limited to minimum of 6,000 Mcf per annum and 50% use of demand.  
Up to 750 Mcf per Mo. - 17¢/Mcf  
Up to 2,000 Mcf per Mo. -16.5¢/Mcf  
Up to 5,000 Mcf per Mo. -14.5¢/Mcf  
Up to 15,000 Mcf per Mo. -13.5¢/Mcf  
All over 15,000 Mcf per Mo. - 13.0¢/Mcf. plus  
Demand Charge - \$1.00 per 100 Mcf per month based on the average monthly volume used in the then expired annual period, from the 1st of January to the 31st of December.  
Minimum Monthly Charge - the demand charge.  
Separate contracts can be negotiated for the supply of natural gas to large industrial users.

(2) Class "B"  
Applicable to:  
Combined heating and industrial process customers.  
First 100 Mcf per Mo. - 22¢/Mcf  
Next 400 Mcf per Mo. - 19.5¢/Mcf  
All over 500 Mcf per Mo. - 18.5¢/Mcf. plus  
Demand Charge - \$1.00 per 100 Mcf per month based on the average monthly volume used in the then expired annual period, from the 1st of January to the 31st of December.  
Minimum Monthly Charge - the demand charge.

Natural Gas  
(1) General Rate -  
Available to all customers. First 20 Therms or less \$3.00 per month. All additional Therms 4.5¢ per Therm.

(2) Optional Rate -  
Available on annual contract to customers whose annual consumption is more than 11,900 Therms.  
Fixed Charge - \$20 per month plus Commodity Charge - 2.7¢ per Therm. Minimum Monthly Charge - \$20.

(3) Optional High Load Factor Rate -  
Available on annual contract to all customers whose annual consumption is more than 100,000 Therms.  
Fixed Charge - \$20 per month plus 22¢ per month per Therm of maximum 12-hour demand. Plus Commodity Charge - 1.7¢ per Therm. Minimum Monthly Charge - Fixed Charge.

Propane:  
Bulk per gallon - 15¢  
100 lb. cylinders - \$5.00

Diesel Fuel:  
Per gallon - 19¢

Coal:

	Shed	Car
Nut & Stoker	\$7.50/ton	\$7.00/ton
Egg	\$7.80/ton	\$7.30/ton
Lump	\$9.25/ton	\$8.75/ton

## LLOYDMINSTER

10" - 12" black soil. 15" - 20" compact sub-soil. Lime layer 24" - 30" below surface.

Natural gas, L. P. gas, coal, diesel fuel.

Natural Gas:

(1) Rate #1 - General Rate  
Commercial and Residential

1st 20 Therms or less/mo. - \$3.00  
All additional Therms 4.5¢/Therm  
Minimum Charge per mo. - \$3.00

(2) Rate #2 - Optional Rate  
Users in excess of 11,900 Therms per year.

Fixed Charge - \$20 per month plus  
Commodity Charge - 2.7¢ per Therm  
Minimum Monthly Charge - \$20 per month.

(3) Rate #3  
Available on annual contract to all customers whose annual consumption is more than 100,000 Therms and whose total consumption during the six meter reading periods ending May, June, July, August, September and October, is not less than 40% of their total consumption during the year.

Fixed Charge - \$20 per month plus  
22¢ per month per Therm of maximum 12-hour demand plus  
Commodity Charge - 1.7¢ per Therm.  
Minimum Monthly Charge - Fixed Charge.

## CAMROSE

12" - 14" black soil. 24" - 30" compact clay sub-soil. Lime layer 30" - 40" below surface. Drainage good.

Natural gas, electricity, coal, propane, diesel fuel.

Natural Gas:

(1) Rate #1 - General Rate  
Commercial and Residential

1st 20 Therms or less/mo. - \$3.00  
All additional Therms 4.5¢/Therm  
Minimum Charge per mo. - \$3.00

(2) Rate #2 - Optional Rate  
Users in excess of 11,900 Therms per year.

Fixed Charge - \$20 per month plus  
Commodity Charge - 2.7¢ per Therm  
Minimum Monthly Charge - \$20 per month.

(3) Rate #3  
Available on annual contract to all customers whose annual consumption is more than 100,000 Therms and whose total consumption during the six meter reading periods ending May, June, July, August, September and October, is not less than 40% of their total consumption during the year.

Fixed Charge - \$20 per month plus  
22¢ per month per Therm of maximum 12-hour demand plus  
Commodity Charge - 1.7¢ per Therm.  
Minimum Monthly Charge - Fixed Charge.

Propane:  
per gallon (bulk) - 15¢  
100 lb. cylinder - \$6.00

Fuel Oil:  
Diesel (bulk) - 18¢ per gallon  
Stove oil (bulk) - 16.7¢ per gallon

Coal:  
Price per ton f. o. b. mine:  
Lump - \$6.00      Stoker & Nut - \$5.25  
Egg - \$5.75      Slack - \$1.50

## DRUMHELLER

Sedimentary soil. Lime layer 24" below surface.

Natural gas, electricity, coal, propane, diesel fuel.

Natural Gas:

(1) Rate #1 - General Rate  
Commercial and Residential

Rate - 15¢ per Mcf for large industrial users.

Coal:  
75¢ per ton for large industrial users.

## GRANDE PRAIRIE

6" - 12" black soil. Fertile farm area.

Natural gas, electricity, coal, propane, diesel fuel.

Natural Gas:

(1) Residential and Light Commercial  
First 4 Mcf - \$3.00 per month

Balance @ 58¢ per Mcf.  
or  
First 2 Mcf - \$3.00 per month  
Balance @ 52¢ per Mcf.

(2) Industrial rates for large consumers can be secured from Northland Utilities Ltd.

## WETASKIWIN

12" - 14" black to very dark brown surface horizon. Sub-soil usually dark brown. Lime layer 24" - 40" below the surface.

Natural gas, electricity, coal, propane, diesel fuel.

Natural Gas:

(1) Rate #1 - General Rate.  
Commercial and Residential

1st 20 Therms or less/mo. - \$3.00  
All additional Therms - 4.5¢/Therm  
Minimum Charge per mo. - \$3.00

(2) Rate #2 - Optional Rate.  
Users in excess of 11,900 Therms per year.

Fixed Charge - \$20 per month plus  
Commodity Charge - 2.7¢ per Therm  
Minimum Monthly Charge - \$20 per month

(3) Rate #3  
Available on annual contract to all customers whose annual consumption is more than 100,000 Therms and whose total consumption during the six meter reading periods ending May, June, July, August, September and October, is not less than 40% of their total consumption during the year.

Fixed Charge - \$20 per month plus  
22¢ per month per Therm of maximum 12-hour demand plus  
Commodity Charge - 1.7¢ per Therm.  
Minimum Monthly Charge - Fixed Charge.





	CALGARY	EDMONTON	LETHBRIDGE	MEDICINE HAT	RED DEER	
IV	INDUSTRIAL FUEL: (Continued)					
(2)	Cost of fuel to industry: (Continued)	(b) Special Service Availability: To customers on annual contract whose annual consumption of gas is not less than 150,000 Mcf and whose total consumption during the six meter reading periods ending in May, June, July, August, September and October is not less than 40% of their total consumption for the year, and who are located adjacent to the Company's main transmission lines serving the Calgary-Lethbridge System, and served directly therefrom. Net Rate: Fixed Charge - \$20 per month plus \$1.00 per month per Mcf of maximum 12-hour demand; plus Commodity Charge - First 75,000 Mcf per month - 17¢ per Mcf. All additional Mcf per month - 15¢ per Mcf. Minimum Monthly Charge - Fixed Charge  For further information, direct all inquiries to: The Manager, Sales and Industrial Development Department, Canadian Western Natural Gas Company Limited, 140 - 6 Avenue S. W., Calgary, Alberta.		total consumption during the six meter reading periods ending in May, June, July, August, September and October is not less than 40% of their total consumption for the year. Fixed Charge - \$20 per month plus \$1.00 per month per Mcf of maximum 12-hour demand; plus Commodity Charge - First 75,000 Mcf per month - 17¢ per Mcf. All Additional Mcf per month - 15¢ per Mcf. Minimum Monthly Charge - Fixed Charge.  Propane Gas; Bulk per gallon - 15¢ 100 lb. cylinder - \$5.00 A charge is made for installation of equipment.  Coal: Sub-bituminous "A" coal with a calorific value of 10,200 B. T. U. per pound. F. O. B. prices per ton:  Lump - \$8.90      Stoker - \$5.00 Egg - \$7.90      Mine Run - \$4.00 Nut - \$5.00      Slack - \$2.50	(3) Class "A-C" Applicable to: All commercial enterprises, private and public institutions, etc. First 2 Mcf or less - \$2.00 per mo. Next 74 Mcf per mo. - 30¢ per Mcf Next 125 Mcf per mo. - 30¢ per Mcf Next 100 Mcf per mo. - 22¢ per Mcf All over 302 Mcf per month - 18¢ per Mcf plus Demand Charge - \$2.00 for the first 100 Mcf then 50¢ per each additional 100 Mcf based on the maximum monthly volume used in any current annual period. Minimum Monthly Charge - the demand charge.	
V	TRANSPORTATION FACILITIES:					
(1)	Facilities available:	International Airport - Scheduled service: Air Canada, CPA, PWA, Western Airline, West Coast Airlines, Mel Air Service, Lethbridge Air Service; Charter air and helicopter rentals.  Railways: C N R, C P R  Bus and truck service. Highways - paved connections on Trans-Canada Highway.	Edmonton International Airport; Edmonton Industrial Airport; Namao Airport - Scheduled service: Air Canada, CPA, PWA; Charter air and helicopter rentals.  Railways: C N R, C P R, N A R with extension to Pine Point.  Bus and truck service. Highways - paved connections.	Commercial Airport - Scheduled Service: Air Canada, Lethbridge Air Service.  Railway: C P R  Bus and truck service. Highways - paved connections.	Commercial Airport - Scheduled service: Mel Air Service.  Railway: C P R  Bus and truck service. Trans-Canada Highway.	Red Deer Industrial Airport - Scheduled air services proposed for 1967. All services available.  Railways: C N R, C P R  Bus and truck service. Highways - paved connections.
VI	MARKET AREAS:					
	Trading area covers all Alberta from Red Deer south; part of southern Saskatchewan; and south central British Columbia. 1966 Population served approximately (100 mile radius): 520,000	Trading area includes Alberta south to Red Deer; east to Lloydminster; west to Jasper, and north to include N. W. T. and northwest B. C. and Yukon. Population served approximately: 750,000	Trading area includes Alberta south to international border; east to Saskatchewan border; north to Nanton and Vulcan; and west through Crowsnest Pass to Trail, B. C. Population served approximately (50 mile radius): 100,000	Trading area includes south to international border; east to Piapot, Saskatchewan; north to Oyen. Population served in trading area (50 mile radius): 39,000	Retail trading area includes central Alberta east to Saskatchewan border. Manufacturers' market extends north to Edmonton and south to Calgary. Population served approximately (50 mile radius): 112,000	

## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

## GRANDE PRAIRIE

## WETASKIWIN

Commercial Airport -  
No scheduled service.

Railways: C N R, C P R

Bus and truck service.  
Highways - paved connections.

Trading area includes North 40  
miles, West 30 miles, South 70  
miles, East 60 miles.  
Population served approximately:  
55,000

Municipal Airport -  
No scheduled air service.

Railways: C N R, C P R

Bus and truck service.  
Highways - paved connections.

Trading area includes north to  
Tofield, east to Saskatchewan  
border, west to Gwynne, south  
to Stettler.  
Population served approximately  
(50 mile radius excluding Edmon-  
ton): 104,000

Private Airport only.  
No scheduled air service.

Railways: C N R, C P R

Bus and truck service.  
Highways - paved connections.

Trading area includes north to  
Stettler, east to Saskatchewan;  
west to Beiseker.  
Population served approximately  
(50 mile radius): 38,000

Commercial Airport -  
Scheduled air service: CPA;  
Charter services to Rainbow Lake  
and other areas, helicopter rentals.

Railways: N A R and Alberta  
Resources Railway under construc-  
tion to the south of Grande Prairie.

Bus and truck services.  
Highway - paved to Edmonton.

Trading area covers most of the  
Peace River Block.  
Population served: 50,000

Two private Airfields.  
No scheduled air service.

Railway: C P R

Bus and truck service.  
Highways - paved connections.

Trading area includes: north 15  
miles, west 90 miles, south 15  
miles, east 15 miles.  
Population served approximately:  
24,000





# CALGARY

# EDMONTON

# LETHBRIDGE

# MEDICINE HAT

# RED DEER

## VII DISTRIBUTION FACILITIES:

Adequate storage and warehouse space; truck terminal facilities; railway terminal facilities; CPR transcontinental rail line; Trans-Canada Highway; Highway No. 2 south to International border and north to Alaska Highway.

Adequate storage and warehouse space; truck terminal facilities; CNR transcontinental rail line; NAR connection to Mackenzie River water transportation system and extension to Pine Point.

Adequate warehouse space; truck terminal facilities; CPR-Crowsnest transcontinental rail line.

Warehouse space, truck terminal facilities; CPR transcontinental rail line; Trans-Canada Highway.

Adequate warehouse space; truck terminal facilities; CPR, CNR line to all points. Four-lane highway to Edmonton and Calgary. David Thompson Highway direct route to Banff-Jasper Highway.

## VIII ELECTRIC POWER:

(1) Source of Power:  
\* All electric power supplied is 3 phase, 60 cycle a/c. All plants interconnected to accommodate increased load demands and improve reliability of supply.

Calgary Power Ltd. from 12 existing and 1 developing hydro-electric plants and one steam plant. Supplied at any voltages required by consumer. City owned distribution system.

City owned gas fired steam generation.

City owned gas fired steam generation plant. Supplies at any voltage.

City owned gas fired steam generation plant. Interconnection with Calgary Power Ltd.

Calgary Power Ltd. and distributed by City.

(2) Cost:

City of Calgary Electric System:  
(1) Commercial Rate  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
Additional KWH - 2¢/KWH

Power Rate (Less than 100 KVA):  
1st 30 hrs. per HP connected load - 2¢/KWH  
Next 30 hrs. per HP connected load - 1.6¢/KWH  
All additional KWH - 1.2¢/KWH

(2) Wholesale (Industrial) Power  
Low voltage network demand over 100 KVA:  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
Next 30 hrs. use per KVA demand - 2¢/KWH  
Next 30 hrs. use per KVA demand - 1.6¢/KWH  
All additional KWH - 1.1¢/KWH

(3) Wholesale (Industrial) Power  
Primary voltage demand of 100 KVA of which power demand over 50 KVA:  
1st 300 KWH - 5¢/KWH  
Next 300 KWH - 4¢/KWH  
All additional KWH rates depend on ownership of transformers.

(4) Large Industrial Users  
Rate Schedule 58 (Rates provided upon request).  
Available to large industrial customers served from City of Calgary Electrical Systems 13, 200 volt, 3 phase system and whose actual electrical demand load is 2,000 KVA or greater.

City of Edmonton Electrical Distribution System:  
General Service Rates:  
(1) Customers with consumptions not over 6,200 KWH per month and with a demand not over 50 KVA will be billed on an energy basis as follows:  
Up to 25 KWH - \$2.50  
Next 475 KWH @ 3.0¢ per KWH  
Next 1,600 KWH @ 2.0¢ per KWH  
Next 4,100 KWH @ 1.25¢ per KWH  
Minimum Bill - \$2.50 or \$2.00 per KVA of demand, whichever is the greater.

(2) Customers with consumptions over 6,200 KWH per month and/or a demand of 50 KVA or greater will be billed on a demand energy basis as follows:  
First 124 KWH per KVA of demand at \$2.00 per KVA of demand.

The balance of the KWH according to the following formula:

(5,000 x 0.5¢) per KWH  
(2,675 + Demand

or at 0.5¢ per KWH, whichever is the greater.  
Minimum Billing Demand - 50 KVA  
Minimum Bill - \$2.00/KVA of demand.

The General Service Electric Power Rate will apply:

(a) To all customers requiring a Business License or Business Permit (Municipal, Provincial or Federal or who are subject to a Business Tax, or occupying premises that are subject to Commercial Assessment.

(b) To multiple dwellings where energy is metered on one meter and the conditions outlined in Clause (A) of the Domestic Electric Power Rate Schedule do not apply.

Rates: (bi-monthly)

(1) Commercial  
0 - 80 KWH -- Min. bill \$4.00  
First 200 KWH @ 5.0¢  
Next 600 KWH @ 4.5¢  
Next 1,200 KWH @ 3.0¢  
Over 2,000 KWH @ 2.4¢

(2) Power  
Demand Charge - 45¢ per HP  
0 - 100 KWH -- Min. bill \$4.00  
First 400 KWH @ 3.6¢  
Next 1,600 KWH @ 2.25¢  
All over 2,000 KWH @ 1.8¢

Commercial and Power Special Rate:  
Consumer over 10,000 KWH per month on one meter - special rate on application.

Industrial Bulk Power Electrical Rates: (monthly)

(1) 13,800 Volt Service -Class 4.2  
Wholesale power customers who are within reach of the City's existing 13,800 volt lines, and who used the City's standard service at 13,800 volts for industrial power service and who have a demand of not less than 500 KVA and use not less than 10,000 KWH per month. All utilization equipment provided by the customer.

Demand Charge:  
Per KVA of measured demand during the current month or any of the preceding eleven months \$1.00 per KVA plus an

Energy Charge:  
First 200 KWH used per KVA of monthly demand 1/2¢ per KWH remainder .33¢ per KWH

(2) 4,000 Volt Service - Class 4.1  
Primary power customers who are within reach of the City's existing primary distribution lines, and who use the City's standard service at 4,000 volts for industrial power service and who have a demand of not less than 100 KVA and use not less than 10,000 KWH per month. All utilization equipment provided by the customer.

Demand Charge:  
Per KVA of measured demand during the current month or any of the preceding eleven months \$1.00 per KVA plus an

Energy Charge:  
First 100 KWH used per KVA of monthly demand 3/4¢ per KWH remainder 1/2¢ per KWH

Commercial Rate:  
Monthly - measured demand of 50 KVA and over

(1) Alternative A:  
0 - 25 KWH \$2.50 Min. Charge  
Next 425 KWH 5.5¢/KWH  
Next 1,575 KWH 3.0¢/KWH  
Next 5,100 KWH 1.4¢/KWH  
Bill paid within 10 days of issue subject to 10% discount.

(2) Alternative B:  
For customers with consumption of 7,125 KWH or above. Will be charged for minimum of 7,125 KWH per month as follows:  
First 20 hours use of KVA of demand -- 4.7¢/KWH  
Next 20 hours use of KVA of demand -- 3.0¢/KWH  
Balance used -- 1.3¢/KWH  
Minimum bill for customers with a demand of 50 KVA or over \$143.63 or \$2.00/KVA per month, whichever is the greater.  
Bill paid within 10 days of issue subject to 10% discount.

(3) Alternative C:  
Reduced rate for customers who supply their own transformers and switching equipment. Rates provided upon request.

(4) Alternative D:  
Off-Peak Rate - supplied upon request.

LLOYDMINSTER	CAMROSE	DRUMHELLER	GRANDE PRAIRIE	WETASKIWIN
Truck terminal facilities, CNR and CPR branch lines; paved high-ways to Edmonton and Saskatoon, Saskatchewan.	Truck terminal facilities; CNR and CPR branch lines; paved high-way to Edmonton and Calgary.	Truck terminal facilities; CNR and CPR branch lines; paved high-way to Calgary.	Adequate storage and warehouse space. Truck terminal facilities.	Adequate storage and warehouse space. Truck terminal facilities.
Canadian Utilities Ltd. steam gen-eration plant at Vermilion.	Calgary Power Ltd.	Canadian Utilities Ltd. steam gen-eration plant.	Canadian Utilities Ltd. serves the City and District. Gas turbines and back-up power units produce the electric power.	Supplied by Calgary Power Ltd.
Commercial Rate:  Monthly Energy Charge: (1) 1 to 5 KW, 1 Phase First 200 KWH @ 4.5¢ Next 800 KWH @ 2.5¢ Next 1,000 KWH @ 1.8¢ Excess KWH @ 1.5¢ Minimum Charge @ \$2.40  (2) 5 KW and over, 1 or 3 Phase First 40 KWH/KW demand 2.5¢ Next 100 KWH/KW demand 1.8¢ Next 200 KWH/KW demand 1.5¢ Minimum Charge - \$1.00/KW per mo.	(1) General Service Applicable to commercial estab-lishments and other premises which do not qualify for the residential service rate.  Demand Charge -- \$1.00 per month per KW (or fraction thereof) of demand.  Energy Charge -- The first 40 KWH/KW of demand - 5¢ per KWH Next 40 KWH/KW of demand, but not over 400 KWH/Month - 3¢/KWH All additional energy used per month - 1 1/4¢ per KWH Discount - None. (5% added after 10 days) Minimum Charge - \$1.50 net per month; or demand charge if greater.  "Demand" means the maximum 30-minute rate of power delivery ex-pressed in kilowatts, during the bill-ing period, but not less than 75% of the maximum demand occurring in the preceding 12 months and in no case less than 1 KW. Unless a demand meter is installed, the Company may establish the demand by test, or by an estimate of the customer's con-nected load.  (2) Industrial Service On request Calgary Power Ltd. will furnish rates, terms and conditions for contracts to supply small or large, low or high load factor industrial loads, at one of various standard voltages available.	Monthly Energy Charge: (1) 1 to 5 KW, 1 Phase First 200 KWH 4.5¢ Next 800 KWH 2.5¢ Next 1,000 KWH 1.8¢ Excess KWH 1.5¢ Minimum Monthly Charge - \$2.40  (2) 5 KW and over, 1 or 3 Phase First 40 KWH/KW demand 4.5¢ Next 160 KWH/KW demand 2.5¢ Next 200 KWH/KW demand 1.8¢ Excess KWH 1.5¢ Minimum Monthly Charge - \$1.00/KW	(1) Commercial Rates: First 40/KW of demand @ 4.5¢ Next 160/KW of demand @ 2.5¢ Next 200/KW of demand @ 1.8¢ Excess KWH used @ 1.5¢  (2) General Service Use: First 200 KWH used @ 4.5 ¢ Next 800 KWH used @ 2.5 ¢ Next 1,000 KWH used @ 1.8 ¢ Excess KWH used @ 1.5 ¢  (3) Industrial Service: Special industrial rates are available to heavy industry establishing in the area.	(1) Commercial Rates: Demand charge per KW or - \$1.00 Energy Charge: First 40 KWH per KW of demand -- 5.0¢ Next 40 KWH per KW of demand -- 3.0¢ Over 400 KWH per month -- 1 1/4¢ per KWH  "Demand" is the maximum 30 minute rate of power delivery, expressed in kilowatts, during the previous 12 months; and not less than 1 KW. Alternatively the demand may, at the Company's option, be measured and billed in kilowatts, or may be estimated by testing or from the consumer's connected load. Minimum demand 1/2 KW in Wetaskiwin. Minimum Charge - \$1.50  (2) Power Rates: Demand Charge - \$1.00/KVA Energy Charge - First 100 KWH used per month/KVA of installation - 3 1/3¢ All over 100 KWH used per month per KV of installation - 1 1/2¢ Rate shown is net. Minimum Charge - \$3.00 net or demand charge, if greater.  "KVA of Installation" one motor HP is taken as one KVA. The company may, at its option estimate the demand or may install a thermal demand meter. When a demand meter is installed, the billing demand is the maximum 30 minute KVA demand in the preceding 12 months.





CALGARY

EDMONTON

LETHBRIDGE

MEDICINE HAT

RED DEER

VIII ELECTRIC POWER:(Continued)

(2) Cost (Continued)

Service to be taken at 600 volts or less, single-phase, three-phase, 3-wire or three-phase 4-wire.

Demand to be taken at the highest 15 minute interval in any one month and this will be accepted as the maximum demand for the succeeding months or until a greater demand is established. The demand will be re-set not later than November 1st, of each year.

(3) Commercial  
120/208 Volt Service - Class 3, 3  
Demand Charge:  
Based upon the highest measured KVA demand for the current month or for each of the next preceding months of November, December, January or February - \$1.00/KVA plus an  
Energy Charge:  
First 200 KWH used per KVA of monthly demand 1 1/2¢ per KWH  
remainder 1¢ per KWH  
Minimum Charge:  
The demand charge above but not less than \$5.00.  
Services at the standard lower secondary voltages also available.

IX WATER SUPPLY:

(1) Source and Quantity Available:

City supply from Elbow River. Additional industrial supply from Bow River and wells for individual supply.

Bow River Stream Flow:  
Average for period of record (1910 - 1965) -- 3260 CFS

There is a large undiminishing water bearing stratum approximately 50 feet below the surface.

Water supply from North Saskatchewan River.  
Stream Flow:  
Minimum flow - 3000 CFS  
Average flow - 10 to 15,000 CFS  
Temperature of treated water:  
Winter 45°  
Summer 70°  
Treatment Capacity -- 80 M. G. D.  
Reservoir Capacity -- 32 M. G.

Water supply from Oldman River.

Stream Flow:  
Average winter minimum - 520 CFS  
Average summer maximum - 12,200 CFS

Water supply from South Saskatchewan River. Cooling water from aquifer.

Stream Flow:  
Average winter minimum-1,350 CFS  
Average summer maximum-53,870 CFS  
Average Water temperature 40°, 50° (in aquifer). Information on request.  
Filtration capacity (at Power Plant) - 10,000,000 G. P. D.  
Reservoir capacity - 4,100,000 gallons

Water supply from Red Deer River.

Stream Flow:  
Average winter minimum-250 CFS  
Average summer maximum-19,150 CFS  
Average water temperature 50°F  
Groundwater potential excellent.

(2) Quality of water supply:

Bow River water:  
Total hardness averages 104 ppm.  
Water clear in winter, somewhat turbid in summer.  
Well water total hardness 180 ppm.

Average Water Analysis in parts per million (March, 1965):  
Chloride Trace  
Copper 0.30  
Fluoride 0.20  
Iron 0.10  
Nitrate Nil  
Silica 8.0  
Sulphate 85.0  
Alkalinity 147.0  
PH 8.1  
Calcium 58.0  
Magnesium 17.0  
Hardness- by calculation 215  
Ignition Loss 25

North Saskatchewan River water:  
Total hardness(untreated) - Summer, 138 ppm.; Winter, 228 ppm.  
Treatment reduces total hardness to approximately 75 ppm. year round.  
Water clear in winter, turbid in summer.

Oldman River water:  
Total hardness untreated - summer, 120 ppm; winter, 150 ppm. Treatment reduces total hardness by approximately 50% before it enters city mains.

South Saskatchewan River water:  
Average total hardness (untreated) - Summer, 150 ppm.; Winter, 220 ppm.

Typical Analysis in ppm (March 28, 1967)  
Dissolved Solids 210  
Suspended Solids 60  
Total hardness 134  
Calcium hardness 92  
Magnesium hardness 42  
Total Alkalinity 115  
PH 7.3  
Chlorides 10  
Sulfates 42  
Turbidity 40  
APHA Color 40

Treated Water  
Hardness 126  
Alkalinity 110  
PH 7.2  
Chlorine 0.35

Red Deer River water:  
Total hardness (untreated) - Summer, 220 ppm.; Winter, 300 ppm.

Treatment reduces total hardness to approximately 100 ppm. year round.  
Groundwater information available on request.

## LLOYDMINSTER

Water supply from wells drilled into a glacial aquifer located 12 miles north of the City. The water is pumped through a 10 inch main to the water treatment plant. The plant has a capacity of 700 gallons of treated water per minute.

Well water - is partly softened, the iron content removed, and chlorinated before entering into the city system.

Water analysis	Parts per Million
Total solids	1600
Nitrates	Nil
Hardness	510
Alkalinity	592
Iron	2.7
PH	8.4

Treated Water analysis	Parts per Million
Total solids	1050
Nitrates	Nil
Fluoride	0.4
Total Alkalinity	348
Nature of Alkalinity	Soda, Lime, & Magnesium

Iron	
Total Hardness	262
Ca Hardness	42
Mg Hardness	220
PH Number (Not in parts per million)	9.2

## CAMROSE

Water is supplied and distributed by Calgary Power Ltd. Water is obtained from a gravel terrace adjacent to Dried Meat Lake, south of Camrose. The terrace is artificially recharged from the Lake. It is then delivered through approximately eight miles of pipeline to the Camrose storage reservoirs with a combined capacity of 2,150,000 Imperial gallons. In addition, there is a 100,000 Imperial gallon elevated tank. Pressure in the distribution system is maintained between 60 and 70 p.s.i.

Dried Meat Lake water:	
Average Water Analysis in Parts per Million:	
Total solids	450
Ignition Loss	176
Hardness	230
Sulphates	75
Chlorides	10
Alkalinity	250
Nature of Alkalinity - Bicarbonate of Lime and Magnesium.	

Nitrate Nitrogen	Nil
Nitrite Nitrogen	Nil
Iron	.1

## DRUMHELLER

Water supply from wells approximately 40 feet deep, fed by filtration from Red Deer River. Main pump capacity 800 gallons per minute. Standby pump capacity 1,000 gallon per minute. Water storage capacity 175,000 gallons in town, 60,000 gallons at plant, and an additional 500,000 gallon tank.

Well water and river:  
Total hardness - 120 ppm water at treatment plant.

Typical Analysis in parts per million:	
Total solids	270
Ignition Loss	120
Hardness	130
Sulphates	30
Chlorides	8
Alkalinity	150

Nature of Alkalinity - Bicarbonate of Lime and Magnesium.

Nitrate Nitrogen	Nil
Nitrite Nitrogen	Nil
Iron	Nil

## GRANDE PRAIRIE

The city of Grande Prairie has two sources of water at the present time. The old system draws water from Bear Creek, which flows through the centre of the city. This will continue to be an alternate source of water for a few years. The new system draws water from the Wapiti River. A large settling basin at the Wapiti will provide adequate water during periods of high turbidity in the river.

Wapiti River water:  
The water is flourinated and distributed throughout the City by the use of twin towers situated on the high ground northeast of the City.

## WETASKIWIN

A water treatment plant is presently under construction at Coal Lake, northeast of the City limits. This plant will double present supply of water producing 350 i.g.m. and can be increased to 720 i.g.m. Storage facilities have a combined total of 1,700,000 gallons.

Typical Analysis in parts per million:	
Total solids	838
Ignition Loss	108
Hardness	70
Sulphates	95
Chlorides	26
Alkalinity	522

Nature of Alkalinity - Bicarbonate of Soda, Lime & Magnesium.

Nitrite Nitrogen	Nil
Nitrate Nitrogen	Nil
Iron	0.31
Fluoride	1.02





## CALGARY

## EDMONTON

## LETHBRIDGE

## MEDICINE HAT

## RED DEER

## IX WATER SUPPLY: (Continued)

(3) Cost of water  
(city service):

Gallons	Rate / 1,000 gallons
First 5,000	62¢
Next 5,000	56¢
Next 20,000	50¢
Next 30,000	41¢
Next 90,000	28¢
Next 350,000	25¢
Over 500,000	21¢

Minimum monthly charge based on size of service line. Special garden rates in summer months. Sewer service charge additional.

Consumption per Month	Rate/100 cu. ft. (Inclusive of Sewer Service)
First 800 cu. ft.	43.0¢
Next 3,200 cu. ft.	34.3¢
Next 3,500 cu. ft.	28.2¢
Next 17,500 cu. ft.	26.8¢
Next 475,000 cu. ft.	22.4¢
Next 1 million cu. ft.	21.0¢
Over 1.5 million cu. ft.	17.5¢

Bimonthly Consumption (in cubic feet)	Rate / 100 cu. ft. (non-cumulative)
From 0 to 1,600	37¢
From 1,601 to 3,600	34¢
From 3,601 to 8,000	31¢
From 8,001 to 14,000	28¢
From 14,001 to 27,200	25¢
From 27,201 to 42,000	23¢
From 42,001 to 56,000	22¢
From 56,001 to 72,000	20¢
From 72,001 to 200,000	18¢
From 200,001 to 1,000,000	16¢
From 1,000,001 to 3,000,000	14¢
From 3,000,001 and upwards	13¢

Commercial minimum bi-monthly rates based on size of meter,

Size	Rate
1/2 and 3/4 inch	\$5 - 1,360 cu. ft.
1 inch	\$6 - 1,760 cu. ft.
1 1/4 inch	\$7.50 - 2,200 cu. ft.
1 1/2 inch	\$9 - 2,640 cu. ft.
2 inch	\$10.50 - 3,080 cu. ft.
3 inch	\$13 - 4,200 cu. ft.
4 inch	\$15 - 4,840 cu. ft.
6 inch	\$24 - 7,740 cu. ft.
8 inch	\$36 - 12,860 cu. ft.
10 inch	\$52

Consump- tion per Mo. / 1000 Gallons	Rate Per 1000 Gallons	Minimum Monthly Charge
0 to 6	.35	2.10
6 to 10	.34	2.38
10 to 25	.31	3.41
25 to 45	.29	7.83
45 to 80	.25	12.50
80 to 130	.23	20.70
130 to 175	.21	31.50
175 to 250	.19	39.90
250 to 600	.18	54.00
600 to 1000	.16	120.00
Over 1000	.15	187.50

Meter Rentals

1/2 inch service	.15
3/4 inch service	.25
1 inch service	.35
1 1/4 inch service	.50
1 1/2 inch service	.65
2 inch service	.85
3 inch service	1.75
4 inch service	3.00
5 inch service	3.00

Monthly Consump- tion	Rate Per 100cu.ft.	Minimum Monthly Charge
0 - 600 cu. ft.	75¢	\$4.05
601 - 2,000 cu. ft.	67¢	\$4.50
2,001 - 7,000 cu. ft.	52¢	\$13.40
7,001 - 13,000 cu. ft.	43¢	\$36.40
13,001 - 23,000 cu. ft.	34¢	\$55.90
23,001 cu. ft. & over	23¢	\$78.20

X LOCAL LAWS AND  
REGULATIONS of signi-  
ficance to prospective  
industry:

Alberta Labour Act  
Provincial Business Licensing  
City Business Licensing  
City Permit required for all  
construction (also Planning  
Department Certificate of  
Compliance)  
Zoning Bylaw  
Building Code Bylaws  
Waste Disposal Regulations  
District Planning Commission

Alberta Labour Act  
Provincial Business Licensing  
City Business Licensing  
City permit required for all  
construction  
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Alberta Labour Act  
Provincial Business Licensing  
City Business Licensing  
City permit required for all  
construction  
Municipal Planning Commission

Alberta Labour Act  
Provincial Business Licensing  
City Business Licensing  
City permit required for all  
construction  
Zoning Bylaw  
Building Code Bylaws  
Waste Disposal Regulation  
District Planning Commission

XI CITY TAX STRUCTURE:

Calgary follows the Provincial  
Assessment Manual for Alberta;  
which uses as its basis: 75% of  
1957 replacement value.  
(1) Land assessed at 100% of  
the above assessment level which  
approximates 2/3 of the current  
replacement value.

(2) Buildings are taxed at 60%  
of the above assessment level  
which approximates 40% (60% of  
2/3) of the current value less  
depreciation for age.

The fair actual value of land  
and buildings for appraisal pur-  
poses is approximately 75% of  
1957 costs.  
(1) Land assessed at 100% of  
fair actual value.

(2) Buildings and improvements  
assessed at 60% of fair actual,  
except single family dwellings  
which are assessed at 50%.

(3) Machinery used in manufac-  
turing or in processing is assessed  
at 30% of fair actual value.

(1) Land assessed at 75% of 1957  
fair value.

(2) Improvements assessed at  
60% of 75% of the 1957 replace-  
ment value.

(3) Business: Levied on the basis  
of 7 1/2% of the assessed fair  
annual rental value of the premises  
of any trade, business, or profes-  
sion.

1966 Mill Rate: 54.0

(1) Land assessment represents  
100% of fair actual value; fair  
actual value being 75% of 1957  
values.

(2) Improvements, except mach-  
inery and equipment, used in manu-  
facturing and/or processing plants,  
are assessed at 60% of 75% of 1957  
depreciated replacement value.  
Depreciation on these improvements  
is up to December 31, 1965.

(1) Land: is taxed on 100% of  
assessed value.  
Assessed values of land from  
\$650 per front foot in prime Com-  
mercial area to \$16.50 per front  
foot in fringe industrial areas.

(2) Improvements: Buildings are  
taxed on 60% of 75% of 1957  
building costs, labour and mater-  
ials.

(3) Business Tax: Industrial  
establishments are taxed at 3% of  
estimated annual rental.

## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

## GRANDE PRAIRIE

## WETASKIWIN

Monthly Consump- tion	Rate Per 1000	Sewer Rate / 1000
	Gallons	Gallons
1 - 5000 gallons	\$1.26	64¢
5001 - 30,000 gal.	\$1.08	52¢
30,001 - 100,000 gal.	.73	37¢
Over 100,000	.40	20¢
Minimum Charge for first 3000 gallons -- \$5.70		

First 200 cu. ft. or less used per month -- \$2.75
Next 4,800 cu. ft. used per month -- 55¢ per 100 cu.ft.
Over 5,000 cu. ft. used per month -- 50¢ per 100 cu.ft.
Minimum monthly water rate -- \$2.75

Monthly Consumption	
0 - 3500 gallons	\$3.25
3500 - 5000 gallons	96¢/1000 Gals.
5000 - 10,000 gallons	83¢/1000 Gals.
Next 10,000 gallons	90¢/1000 Gals.
Next 30,000 gallons	85¢/1000 Gals.
Next 50,000 gallons	80¢/1000 Gals.
Next 100,000 gallons	75¢/1000 Gals.
Minimum monthly charge -- \$3.25	

Monthly Consumption	Rate Per 100 Gallons
First 40,000 gallons	11¢
Next 10,000 gallons	10¢
Next 10,000 gallons	9¢
Next 10,000 gallons	8¢
Next 10,000 gallons	7¢
80,000 - 500,000 gallons	6¢
500,000 - 1,000,000 gallons	5¢
Over 1,000,000 gallons	4¢

Monthly Consumption	
First 200 cu.ft.	\$3.25
Next 600 cu.ft.	65¢/100 cu.ft.
Next 1200 cu.ft.	80¢/100 cu.ft.
Next 3000 cu.ft.	50¢/100 cu.ft.
Over 5000 cu.ft.	45¢/100 cu.ft.

Alberta Labour Act  
Provincial Business Licensing  
City permit required for all  
construction

Alberta Labour Act  
Provincial Business Licensing  
City permit required for all  
construction  
The National Building Code of  
Canada  
The Alberta Electrical Protect-  
ion Act  
Development Control Bylaw  
Regional Planning Commission  
Gas Protection Act

Alberta Labour Act  
Provincial Business Licensing  
City permit required for all  
construction

Alberta Labour Act  
Provincial Business License  
City Busines License  
City permit required for all  
construction  
Interim Development Bylaw  
Municipal Planning Committee

Alberta Labour Act  
Provincial Business Licensing  
City Business License  
City permit required for all  
construction  
Gas Protection Act  
Electrical Protection Act  
Zoning Bylaw  
Building Code  
District Planning Commission

(1) Land assessed at 100% of  
fair value.

(2) Improvements assessed at  
60% of 1947 value.

1966 Mill Rate: 63

(1) Land assessed at 65% of 1965  
value.

(2) Improvements assessed at  
60% of 75% of 1957 replacement  
value.

(3) Business Assessment based  
on equivalent rental value. Bus-  
iness tax rate varies from 5% to  
15% according to business class-  
ification.

1966 Mill Rate: 58

(1) Taxable assessment of  
buildings in 1966 represent  
approximately 30% of replace-  
ment cost in that year.

(2) Assessment ratio of land to  
market value approximately 66%  
in 1963.

1966 Mill Rate: 65 public  
58 separate

(1) Assessment is uniform to all  
of Alberta as it complies with the  
Alberta Assessment Manual.

(2) Business Assessment based  
on equivalent rental value.  
Business Tax varies from 3% to  
7% according to business class-  
ification.

1966 Mill Rate: 68

(1) Land is assessed at 65% of  
1966 market values.

(2) Improvements are assessed  
at approximately 60% of 75% of  
depreciated 1957 values.

(3) Machinery in manufacturing  
or processing is assessed at 30%  
of depreciated values.

1966 Mill Rate: 63





		CALGARY	EDMONTON	LETHBRIDGE	MEDICINE HAT	RED DEER																																																																																																														
XI	CITY TAX STRUCTURE: (continued)	<p>(3) Plant machinery and equipment is taxed on 30% of the above assessment level which approximates 20% (30% of 2/3) of the current replacement value.</p> <p>Note: Calgary City Council exempts plant machinery and equipment from taxes where (3) does not apply, and in lieu levies a Business Tax which equals 10% of the fair annual rental value.</p> <p>1966 Mill Rate: 47.5</p>	<p>(4) Business tax is based on current rental value of the premises occupied, and the rates vary from 6% to 20%, depending on the classification.</p> <p>1966 Mill Rate: 48.5</p>		<p>(3) Machinery and equipment, used in manufacturing and/or processing plants, is assessed at 30% of 75% of 1957 depreciated value. Annual depreciation is allowed on these improvements.</p> <p>(4) Where number (3) is not applicable, it has been exempted by bylaw and a business tax is levied in lieu thereof. Business tax is based on either 7% or 9%, depending upon the Class of business of the gross annual rental value of the premises.</p> <p>1967 Mill Rate: 47</p>	<p>(4) Commercial Tax: Commercial establishments are taxed at 8% of estimated annual rental values.</p> <p>1966 Mill Rate: 50</p>																																																																																																														
XII	CLIMATE:	<table><tr><td><u>Temperature</u></td><td><u>Degrees F.</u></td></tr><tr><td>January:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>24.3</td></tr><tr><td>Mean Daily Minimum</td><td>4.0</td></tr><tr><td>July:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>74.8</td></tr><tr><td>Mean Daily Minimum</td><td>49.2</td></tr><tr><td><u>Precipitation</u></td><td><u>Inches</u></td></tr><tr><td>Average annual rainfall</td><td>11.59</td></tr><tr><td>Average annual snowfall</td><td>58.50</td></tr><tr><td>Average annual total precipitation</td><td>17.44</td></tr></table> <p><u>Altitude</u> is 3439 feet.</p> <p>Winter conditions modified by "Chinook" winds which frequently raise temperatures by 30-40° in a few hours.</p>	<u>Temperature</u>	<u>Degrees F.</u>	January:		Mean Daily Maximum	24.3	Mean Daily Minimum	4.0	July:		Mean Daily Maximum	74.8	Mean Daily Minimum	49.2	<u>Precipitation</u>	<u>Inches</u>	Average annual rainfall	11.59	Average annual snowfall	58.50	Average annual total precipitation	17.44	<table><tr><td><u>Temperature</u></td><td><u>Degrees F.</u></td></tr><tr><td>January:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>15.2</td></tr><tr><td>Mean Daily Minimum</td><td>- 2.0</td></tr><tr><td>July:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>74.4</td></tr><tr><td>Mean Daily Minimum</td><td>51.7</td></tr><tr><td><u>Precipitation</u></td><td><u>Inches</u></td></tr><tr><td>Average annual rainfall</td><td>13.26</td></tr><tr><td>Average annual snowfall</td><td>53.8</td></tr><tr><td>Average annual total precipitation</td><td>18.64</td></tr></table> <p><u>Altitude</u> is 2200 feet.</p>	<u>Temperature</u>	<u>Degrees F.</u>	January:		Mean Daily Maximum	15.2	Mean Daily Minimum	- 2.0	July:		Mean Daily Maximum	74.4	Mean Daily Minimum	51.7	<u>Precipitation</u>	<u>Inches</u>	Average annual rainfall	13.26	Average annual snowfall	53.8	Average annual total precipitation	18.64	<table><tr><td><u>Temperature</u></td><td><u>Degrees F.</u></td></tr><tr><td>January:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>27.3</td></tr><tr><td>Mean Daily Minimum</td><td>7.2</td></tr><tr><td>July:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>79.9</td></tr><tr><td>Mean Daily Minimum</td><td>52.0</td></tr><tr><td><u>Precipitation</u></td><td><u>Inches</u></td></tr><tr><td>Average annual rainfall</td><td>10.66</td></tr><tr><td>Average annual snowfall</td><td>65.7</td></tr><tr><td>Average annual total precipitation</td><td>17.23</td></tr></table> <p><u>Altitude</u> is 2993 feet.</p> <p>Winter conditions include "Chinook" winds which frequently raise temperatures by 30-40° in a few hours.</p> <p>The Meteorological Branch of Department of Transport in Lethbridge records a long term annual average of 2384 hours of sunshine, the highest in Canada.</p>	<u>Temperature</u>	<u>Degrees F.</u>	January:		Mean Daily Maximum	27.3	Mean Daily Minimum	7.2	July:		Mean Daily Maximum	79.9	Mean Daily Minimum	52.0	<u>Precipitation</u>	<u>Inches</u>	Average annual rainfall	10.66	Average annual snowfall	65.7	Average annual total precipitation	17.23	<table><tr><td><u>Temperature</u></td><td><u>Degrees F.</u></td></tr><tr><td>January:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>22.4</td></tr><tr><td>Mean Daily Minimum</td><td>1.8</td></tr><tr><td>July:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>83.1</td></tr><tr><td>Mean Daily Minimum</td><td>55.1</td></tr><tr><td><u>Precipitation</u></td><td><u>Inches</u></td></tr><tr><td>Average annual rainfall</td><td>9.42</td></tr><tr><td>Average annual snowfall</td><td>48.7</td></tr><tr><td>Average annual total precipitation</td><td>14.29</td></tr></table> <p><u>Altitude</u> is 2185 feet.</p> <p>Medicine Hat has the longest frost-free growing season of any locality in Alberta.</p>	<u>Temperature</u>	<u>Degrees F.</u>	January:		Mean Daily Maximum	22.4	Mean Daily Minimum	1.8	July:		Mean Daily Maximum	83.1	Mean Daily Minimum	55.1	<u>Precipitation</u>	<u>Inches</u>	Average annual rainfall	9.42	Average annual snowfall	48.7	Average annual total precipitation	14.29	<table><tr><td><u>Temperature</u></td><td><u>Degrees F.</u></td></tr><tr><td>January:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>17.8</td></tr><tr><td>Mean Daily Minimum</td><td>- 2.2</td></tr><tr><td>July:</td><td></td></tr><tr><td>Mean Daily Maximum</td><td>74.3</td></tr><tr><td>Mean Daily Minimum</td><td>50.1</td></tr><tr><td><u>Precipitation</u></td><td><u>Inches</u></td></tr><tr><td>Average annual rainfall</td><td>16.52</td></tr><tr><td>Average annual snowfall</td><td>49.2</td></tr><tr><td>Average annual total precipitation</td><td>21.44</td></tr></table> <p><u>Altitude</u> is 2819 feet.</p>	<u>Temperature</u>	<u>Degrees F.</u>	January:		Mean Daily Maximum	17.8	Mean Daily Minimum	- 2.2	July:		Mean Daily Maximum	74.3	Mean Daily Minimum	50.1	<u>Precipitation</u>	<u>Inches</u>	Average annual rainfall	16.52	Average annual snowfall	49.2	Average annual total precipitation	21.44
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## LLOYDMINSTER

## CAMROSE

## DRUMHELLER

## GRANDE PRAIRIE

## WETASKIWIN

<u>Temperature</u>	<u>Degrees F.</u>
Mean winter	13
July:	
Mean Daily Maximum	76.3
Mean Daily Minimum	51.5
<u>Precipitation</u>	<u>Inches</u>
Average annual rainfall	12.4
Average annual snowfall	40.5
Average April-October total precipitation	11.64
<u>Altitude is 2125 feet.</u>	

<u>Temperature</u>	<u>Degrees F.</u>
January:	
Mean Daily Maximum	13.6
Mean Daily Minimum	- 6.6
July:	
Mean Daily Maximum	75.4
Mean Daily Minimum	49.8
<u>Precipitation</u>	<u>Inches</u>
Average annual rainfall	11.52
Average annual snowfall	38.0
Average annual total precipitation	15.32
<u>Altitude is 2430 feet.</u>	

<u>Temperature</u>	<u>Degrees F.</u>
Mean summer	57
Mean winter	18
Mean Yearly	37.5
<u>Precipitation</u>	<u>Inches</u>
Average annual rainfall	9.86
Average annual snowfall	45.0
Average annual total precipitation	14.36
<u>Altitude is 2247 feet.</u>	

<u>Temperature</u>	<u>Degrees F.</u>
January:	
Mean Daily Maximum	12.1
Mean Daily Minimum	- 5.9
July:	
Mean Daily Maximum	71.8
Mean Daily Minimum	48.8
<u>Precipitation</u>	<u>Inches</u>
Average annual rainfall	10.46
Average annual snowfall	69.14
Average annual total precipitation	17.34
<u>Altitude is 2200 feet.</u>	
Chinook area.	

<u>Temperature</u>	<u>Degrees F.</u>
January:	
Mean Daily Maximum	16.8
Mean Daily Minimum	- 2.5
July:	
Mean Daily Maximum	75.3
Mean Daily Minimum	49.5
<u>Precipitation</u>	<u>Inches</u>
Average annual rainfall	12.92
Average annual snowfall	53.5
Average annual total precipitation	18.27
<u>Altitude is 2493 feet.</u>	





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